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Munitions items represent a substantial portion of equipment sold by the USAF under the Foreign Military Sales (FMS) Program. Little research has been performed to document management problems in this area. The purpose of this thesis was to document perceptions of such problems held by managers working in this area. Through a literature review and discussions with experts, the authors constructed a survey to measure the perceived importance of twenty-nine problems to the USAF as a whole and to specific agencies in the FMS process. The survey was administered to a sample of FMS managers working with USAF munitions sales. The data were analyzed with the Kendall Coefficient of Concordance Test. The results were two-fold. First, rankings of the questions on the survey are provided in the order of importance as perceived by the survey sample. One listing was created for problems of the USAF as a whole. One listing was created for each of the categories of agencies surveyed for problems peculiar to that category. The second result of the research was a list of ten recommendations for further research. These were created from the authors' analysis of the survey results and from suggestions by survey respondents.

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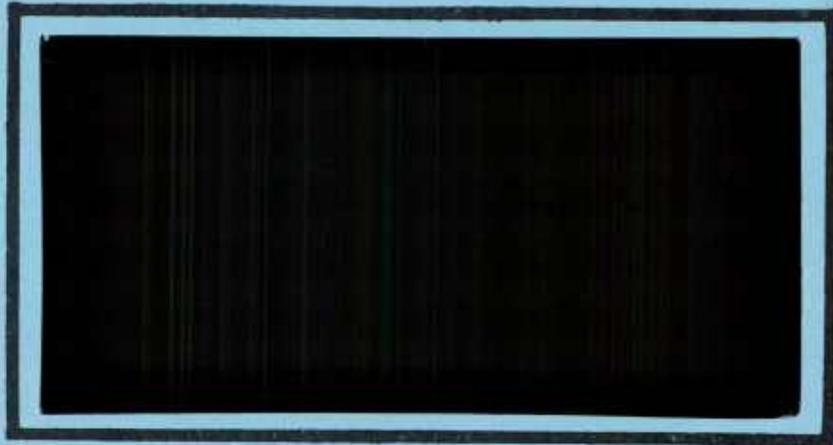
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DETERMINATION AND ANALYSIS OF
PROBLEMS IN AIR FORCE
FOREIGN MILITARY SALES OF
MUNITIONS

Mark D. Greenly, Captain, USAF
Joseph R. Schuler, Sr., Captain, USAF

LSSR 38-80

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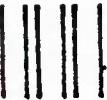
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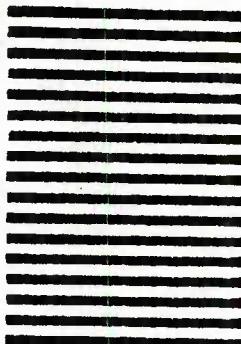


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DETERMINATION AND ANALYSIS OF PROBLEMS
IN AIR FORCE FOREIGN MILITARY
SALES OF MUNITIONS

A Thesis

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology
Air University

In Partial Fulfillment of the Requirements for the
Degree of Master of Science in Logistics Management

By

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June 1980

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MASTER OF SCIENCE IN LOGISTICS MANAGEMENT
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ACKNOWLEDGMENTS

We wish to express our appreciation to those people who provided interest and assistance in this thesis. We acknowledge their efforts and realize that several merit special recognition.

We are especially thankful to our thesis advisor, Mr. Larry A. Mortsolf, and our reader, Lieutenant Colonel Ron Dierker, for their encouragement and guidance. And to Professor Dan Reynolds, a special thanks, for his aiding us through the dark mazes of the field of statistics.

We would also like to thank our typist, Mrs. Cecilia Weaver, for preparing this thesis.

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CHAPTER I

INTRODUCTION

Overview

Purpose

It is intended that this thesis be utilized by the management of various United States Air Force (USAF) agencies involved in Foreign Military Sales (FMS) of munitions to assist in focusing upon problem areas. The thrust is to identify the USAF's current problems which arise in the implementation of munition FMS cases.

Format

This thesis is organized into five chapters and ten appendices. Within this first chapter, the reader is introduced to some key terminologies; the FMS background which constitutes the research environment; and the justification, problem statement, objectives and research questions identified with this specific research effort.

Definition of Terms

Foreign Military Sales (FMS)

FMS is one component of the United States Security Assistance Program authorized by the Foreign Assistance Act

of 1961, as amended, and the Arms Export Control Act, as amended. This assistance differs from the Military Assistance Program and the International Military Education and Training Program in that the recipient provides reimbursement for defense articles and services transferred (18:144).

Foreign Military Sales (FMS) Case

Any transaction for which an FMS case identifier has been assigned on a DD Form 1513, United States Department of Defense Offer and Acceptance (LOA) (13:Al-3).

Foreign Military Sales (FMS) Case Identifier

A specific designation assigned to each FMS case, consisting of a two-alpha/numeric country/activity code, an implementing agency code, and a three-alpha case designator; for example, AT-D-ABC (AT-Australia, D-USAF, ABC-Case designator) (13:Al-3; 17:Part III, Fig.D-1).

Munition

This term, as used in the context of this research, covers a wide variety of items, from 5.56-mm. cartridges to 2,000-pound bombs, including tactical missiles. The majority of munition items have four major components--a metal body, an explosive, a propellant, and a fuze (2:1). It should be noted that cartridge-actuated devices and propellant-actuated devices (CAD/PAD) are specifically

excluded from this research (see Appendix A for a list of munition items, by Generic Code, available for FMS).

Munition Sales Case (USAF)

Those FMS cases involving the sale of bombs, rockets, missiles, ammunition, and other USAF explosives (less CAD/PAD items). It consists of sales of those items which carry a Generic Code of "B" or "G" as shown in Appendix A, Part I, of the Military Assistance and Sales Manual. Such cases will have an alpha code of "A" or "Y" in the first position of the USAF FMS case designator (12:3-5, 3-6, A5-1, A5-2).

Security Assistance

The group of programs authorized by the Foreign Assistance Act of 1961, as amended, and the Arms Export Control Act, as amended, or other related statutes, by which the United States provides defense articles, military training, and other defense related services, by grant, credit or cash sales, in furtherance of national policies and objectives (18:306).

United States Munitions List

Section 38 of the Arms Export Control Act, as amended, states:

. . . the President is authorized to designate those items which shall be considered as defense articles and defense services . . . and to promulgate regulations for the import and export of such articles and services. The items so designated shall constitute the United States Munitions List . . . [19:305].

The United States Munitions List is contained in Title 22, Code of Federal Regulations, Part 121, and is further published in the Department of State's International Traffic in Arms Regulations (ITAR). The Munitions List, applicable to Foreign Military Sales and Direct Commercial Export Sales, is broken down into several categories (e.g., Firearms, Artillery and Projectors, Ammunition, Military and Space Electronics, Technical Data, etc.). Consistent with the definition of "USAF Munitions Sales Case," the scope of the term "munitions" as used in the context of this research represents only a limited portion of those items identified in the United States Munitions List (19:305). This portion is delineated in Appendix A.

Background

The Role of Security Assistance

The United States is a major force in the international arms arena. Security Assistance, a term used to distinguish the security (i.e., primarily military) components of the Foreign Assistance Program, is concerned with the assisting of friendly nations in the creation and

sustainment of forces for their self-defense and internal order (17:I, A-1; 15:26). Security assistance continues:

. . . to be an integral and essential element of the collective security which has been a cornerstone of United States foreign and national security policy since World War II. Participation of allied and friendly nations is absolutely necessary if the United States is to successfully meet all military threats. Collective security is the integration of United States, allied and friendly military forces to meet the security requirements of the free world. The transfer of military equipment and services, either by direct sale or by grants and credits, to nations whose security objectives coincide with or complement United States objectives, serve to benefit both partners by reinforcing regional stability and enhancing United States global security objectives [9:83].

Since 1965, the U.S. has been a dominant force in the world arms market, controlling almost 50 percent of the total sales. There is a political preference on the part of many nations toward dealing with the United States. This country has developed the highest level of technology in military hardware. It also provides follow-on logistics support for the life-cycle of the weapons systems. There are other seller nations who do not offer this kind of support for the customer (7:i).

Arms sales by this country must be in the national interest of the United States as well as the foreign customer. Benefits which have accrued from past sales include the standardization of equipment between the U.S. and its allies (especially the European countries), reduced cost of

material through the purchase of larger quantities, and the creation of a broader logistics base for U.S. forces (7:i).

The Security Assistance Program of the United States became institutionalized in the years following World War II. Legislation was enacted by Congress in 1949 which consolidated earlier aid programs to Greece, Turkey, and the Philippines. Major legislation in the Security Assistance area followed in 1951, 1954, 1961, 1968, and 1976. Each changed the direction and scope of the program as it existed at that time.

Munition Transfers Under Grant Aid

The early thrusts of the Security Assistance Program were in the direction of grants, rather than sales, to foreign nations. From FY 1950 through FY 1979, totals for grants to other nations and organizations exceeded \$55 billion. Munitions grant aid orders accounted for \$12 billion of this total. By comparison, grants for aircraft for the same period were only about \$9.5 billion (15:34; 16:34).

Munition Transfers Under FMS

In the early 1960s emphasis of the Security Assistance Program began to shift from grants toward sales. The Foreign Assistance Act of 1961 authorized the President to sell defense articles and services to friendly foreign

nations or international organizations. The Foreign Assistance Act of 1962 expressed the sense of Congress that the U.S. should phase out military grants in favor of sales (4:14-15).

For the period 1966 to 1975, the United States sold about half of the total world arms sales of about \$70 billion (6:9-12). Munition Sales Cases accounted for a significant portion of this total. For the period FY 1950 to FY 1979, munitions and missiles represented over 20 percent of all equipment sold by the United States. In FY 1970, this figure was 21 percent. For FY 1976, it had risen to over 29 percent (7:4). As late as FY 1979, it remained at about 21 percent of equipment sales. In dollar terms, this most recent year equals about \$1.1 billion out of total equipment sales of about \$5.2 billion (15:34; 16:34).

This quantity was sold to eighty-one of the more than ninety eligible nations and to the North Atlantic Treaty Organizations (NATO), the Organization of American States (OAS), the United Nations (UN) and its agencies, and the International Aviation Organization (17:III,A-2).

Oversight and Management of FMS

The magnitude of U.S. arms sales and the potential for their use against U.S. interests throughout the world have prompted an increase in concern from Congress. In

1974, through a provision of the Foreign Assistance Act of that year, Congress created for itself the power to "veto" any proposed sale of \$25 million or more (4:65). In 1976, through the International Security Assistance and Arms Export Control Act, an amendment to earlier FMS legislation, Congress reaffirmed its authority to "veto" sales over \$25 million involving defense articles and services, or any sale of major defense equipment over \$7 million. It required that the Executive Branch submit to it timely information on the pros and cons of decisions on sales, including the impact on U.S. force readiness (6:45).

These requirements have increased the workload of the Department of Defense (DOD), which has the responsibility of implementing the FMS program. The Air Force, having a significant role in the management of this program, has felt the increasing burden of this workload. The Air Force has been responsible for about 36 percent of the total FMS sales for the FY 1950 to FY 1979 period (15:34; 16:34). From time to time it will also handle sales of items procured from the Army or Navy or non-standard items, (i.e., those not included in the regular Air Force inventory). The Directorate of International Programs, Headquarters U.S. Air Force, is the focal point for FMS within the Air Force. Those Major Commands and Operating Agencies involved with FMS are responsible for negotiating, implementing, and managing specific FMS cases. Each maintains

its own management reports, controls, and procedures to see that USAF obligations are properly met. The management of approved FMS cases is given the same attention, and managed to the same standards, as procurement for USAF forces. The USAF goal is "timely delivery of high quality materiel and services to FMS customers [12:3-1]."

A DOD goal of the FMS programs, and one which is also expressed in public law, is that FMS should be carried out at no cost to the U.S. government. Thus, the customer is charged not only for the purchase price of the articles or services, but also for the cost of administering the sale. Such charges include those for packing, crating, handling, transportation, use of government facilities, and research and development (17:I,G-1; 8:A1-1). The recording, tabulating, and reporting of these charges have added to the cost of administering all FMS cases, munitions sales cases included. A reduction of the number of problems faced by those administering FMS cases would allow them to devote a greater portion of their time to other Air Force-mandated administrative burdens.

Justification for Research

Justification for this research effort lies in several areas. First, a literature review indicates that there has been very little written on the subject of FMS of munitions. It appears that no Air Force-wide studies have

been conducted to determine the existing problems in the Foreign Military Sales of munitions.

Second:

The tremendous increase in Foreign Military Sales by the United States over the past several years has led to a great deal of attention being focused on this activity. . . . This has led to an increase in the requirement for knowledgeable people, in Industry and in the Department of Defense (DOD), to deal with the many associated management problems [3:I-1].

Third, the Air Force is responsible for determination and compilation of pricing, scheduling, contracting for production and delivery of munitions, and training or follow-on logistical support for Air Force cognizant munitions (3:X-25.1).

Fourth:

A major change in the "sense" of the Congress, in the Arms Export Control Act of 1976, is a reversal of the previous policy of encouraging Direct (Commercial) Sales in favor of Foreign Military Sales, and thereby increasing Congressional control of military material and services through reporting and approval constraints [3:III-3].

This action should tend to increase the workload and thereby the management problems of the personnel conducting FMS of munitions within the Air Force.

Fifth:

Over the years, the military departments developed their own systems to manage the rather low level of Foreign Military Sales. Most of the sales involved single service systems and, as a result, the internal policy of management practices and procedures were different. In recent years, and principally since the marked increase in Foreign Military Sales, the requirement for inter-service integration has also

increased because of the composition of many of the systems, e.g., critical subsystems being supplied by different services--Navy engine or missile for an Air Force airframe; the necessary support for the total system therefore being supplied by different services. The multi-service coordination and liaison required in this type of Foreign Military Sale is receiving increased attention in terms of standardization of procedures and management problems and for improved customer service [3:III-16].

This requirement to extend the scope of the Air Force management system pertaining to the Foreign Military Sales of munitions increases the potential for management problem areas to occur.

Sixth, the role of the military in the overseas military program management portion of security assistance programs has declined somewhat in recent years. In 1960s and early 1970s, several thousand U.S. military personnel were assigned to overseas Military Assistance Advisory Groups (MAAGs). As the term MAAG suggests, theirs was an "advisory" role. From 1976 on, largely as a result of Congressional mandate, there has been a significant reduction in the size of overseas MAAGs and a shift from an advisory to a management-assistance/liaison role. The following represents the status of the military role overseas for FY 1980:

Security assistance organizations in foreign countries are an essential part of the overall management of the security assistance program. These organizations perform the following functions:

--supervise logistics, transportation, and fiscal activities related to management of the program in the respective country;

- provide advice and assistance to the Chief of the U.S. Diplomatic Mission on security assistance matters;
- maintain liaison with the foreign defense organizations on security assistance activities;
- oversee the administration of contracts in-country between the Department of Defense and commercial contractors furnishing articles and services under the aegis of the security assistance program; and
- help assure proper utilization and disposition of materiel, training, and technical assistance furnished to the foreign governments through the security assistance program [14:36].

For FY 1980, separate security assistance organizations under the Chief of the U.S. Diplomatic Mission were proposed for forty-eight countries, with fourteen of these (Indonesia, Korea, Philippines, Thailand, Iran, Jordan, Kuwait, Morocco, Saudi Arabia, Greece, Portugal, Spain, Turkey, and Panama) authorized more than six U.S. military personnel. In twenty-four additional countries which do not have separate security assistance organizations, security assistance management functions are assigned to the Defense Attaché's Office (14:36).

This reduction in overseas MAAG presence can place greater demands on stateside activities to provide management assistance to foreign representatives.

Finally, as former Secretary of State Cyrus Vance stated in testimony before the Senate Committee on Foreign Relations:

. . . The general purpose of our security assistance programs is to assist our friends and allies to provide for their legitimate defense needs without detracting

from their own economic and social development. These programs support our strategic-political objectives of reducing tensions and promoting stability in areas of potential confrontation and conflict . . . [20].

In light of this statement, the significance of munition sales is that in order to maintain a viable defense force a country must possess defensive powers. The first step to this power is the acquiring of adequate weapons platforms or vehicles. The second and perhaps more important step is the acquiring of sufficient munitions to create an adequate deterrent. As an example, an F-16 Fighter Aircraft without associated munitions is reduced to only a mode of transportation and adds very little to an adequate defense force.

Problem Statement

There is no corporate identification of problems involved in the management of USAF FMS Munitions Cases.

Research Objectives

The research objectives are as follows:

1. To provide an understanding of the munitions functional area, the organizational complexities of this functional area, and an introduction to Foreign Military Sales of munitions.
2. To provide a listing of problems in the munitions area according to USAF personnel involved with the planning, implementing, executing, or administering of Air Force FMS Cases for Munitions.

3. To provide an indication of the relative importance of these problems according to the same personnel.

4. To identify a course of action once such a list of problems areas is identified and ranked as to their relative importance.

Research Questions

1. What is the basic structure and process through which the Air Force accomplishes munitions-related FMS cases?

2. What are the problems facing the Air Force in the management of munitions-related cases?

3. Which problems in the management of Air Force FMS of munitions are considered the most serious?

4. What are some problem areas requiring further research?

CHAPTER II

THE USAF FMS MUNITIONS CASE ENVIRONMENT AND PROCESS

Introduction

The purpose of this chapter is to provide the reader with a background covering many of the basics of the USAF FMS Case munitions environment and process. It is hoped that this information will enable the general reader to better relate to the functional subject areas addressed in the research survey which is introduced in the next chapter. While the authors recognize that the FMS of munitions involves complex procedures and interfaces, the information which directly follows is intentionally presented in a generalized fashion. It focuses only on the basic fundamentals, and leaves to the interested reader to look to the cited references for more detail, if so desired.

The Munitions Environment

DOD Overall Relationships

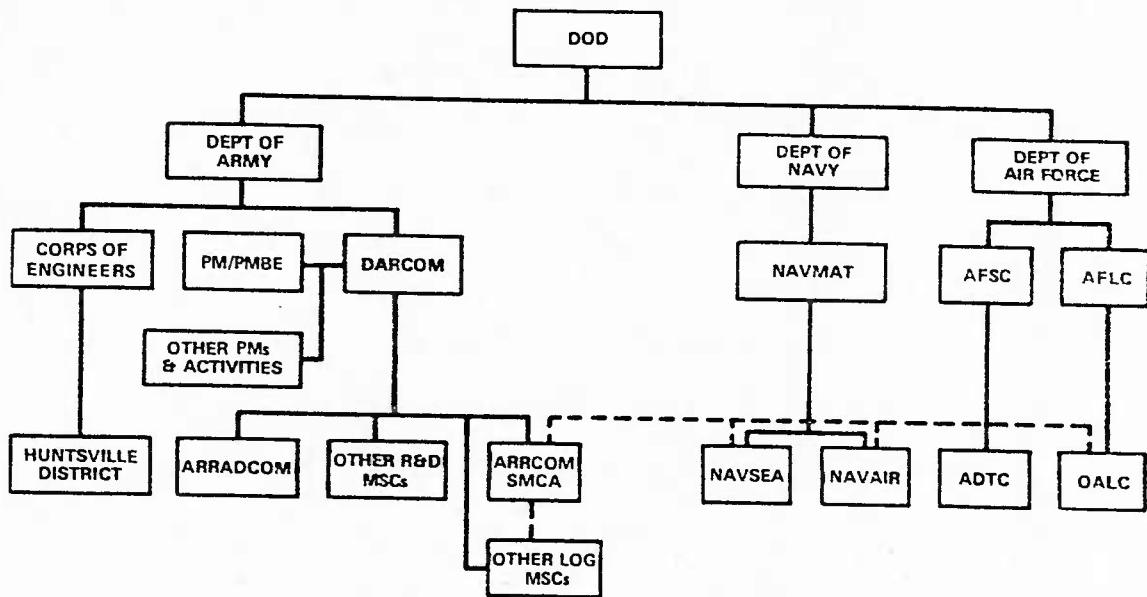
The main thrust of this research lies within the Air Force FMS arena. However, in dealing with problems involving munitions this arena cannot be viewed in isolation. In order to reach an appropriate understanding of

these problems, one must possess a grasp of the DOD structure, especially the Single Manager for Conventional Ammunition (SMCA), in addition to the Department of the Air Force structure involved with munitions. Figure 1 shows the relationships of the DOD agencies involved with the acquisition and logistics of munitions. Since the Department of the Army has SMCA responsibility, both the Army and Air Force organizations are briefly addressed in subsequent sections. The Department of the Navy munitions structure is included in Figure 1 but, in view of the scope of this research, is not specifically discussed.

Department of the Army

Within the Department of the Army, the U.S. Army Material Development and Readiness Command (DARCOM) has primary responsibility for logistical support of munitions. DARCOM has delegated the bulk of that logistical support to the U.S. Army Armament Material Readiness Command (ARRCOM).

The Deputy Secretary of Defense issued DOD Directive 5160.65 on November 26, 1975, assigning the Secretary of the Army as Single Manager for Conventional Ammunition. The single manager concept was organized within ARRCOM. This concept was to be implemented in two phases. Phase I was to achieve partial implementation with expansion to a full single manager in phase II. Phase II was scheduled for completion during fiscal years 1979 and 1980 (2:1). Both



ADTC	- Armament Development and Test Center	NAVMAT	- Naval Material Command
AFLC	- Air Force Logistics Command	NAVSEA	- Naval Sea Systems Command
AFSC	- Air Force Systems Command	OALC	- Ogden Air Logistics Center
DARCOM	- U.S. Army Materiel Development and Readiness Command	PMs	- Project Managers
MSCs	- Major Subordinate Commands	PM/PMBE	- Project Manager/ Production Base Modernization and Expansion
NAVAIR	- Naval Air Systems Command	SMCA	- Single Manager for Conventional Ammunition

Fig. 1. DOD Structure of Departments Involved in the Acquisition and Logistic Management of Munitions (2:3)

phases have met with many obstructions. At the present time, it is uncertain when phase II will be implemented (2:7). The SMCA concept has a significant impact on USAF FMS munitions cases and therefore the SMCA will be discussed in greater detail at a later point in this chapter.

Department of the Air Force

Within the Department of the Air Force, the Air Force Systems Command (AFSC) has responsibility for the acquisition of selected munition items. AFSC has delegated the substantial portion of that effort to either the Armament Development and Test Center (ADTC) or Aeronautical Systems Division (ASD), depending on the particular munition item.

The Air Force Logistics Command (AFLC) has primary responsibility for logistical management of conventional munitions. AFLC has delegated the major portion of that effort, except for tactical missiles, to Ogden Air Logistics Center (OO-ALC). In addition, OO-ALC has been designated the primary focal point for the Air Force in support of the SMCA program. Warner Robins Air Logistics Center (WR-ALC) has been delegated the major portion of logistical support for tactical missiles.

SMCA Concept

Overview of Concept

The General Accounting Office (GAO), in a recent report, stated that they continue to support the centralized ammunition management concept. However, the GAO believes the current system falls far short of what is needed. They contend that the Office of the Secretary of Defense (OSD) must take firm measures to move the concept along. These measures include:

1. expanding the single manager's authority and responsibility in ammunition management, and
2. strengthening the single manager's (i.e., ARRCOM's) position in the DOD structure (2:5).

Current Munition Responsibility

The concept of the SMCA program was to create a full single manager during phase II. This concept envisioned the SMCA assuming virtually all logistical responsibility for conventional munitions. The following quotation from the previously mentioned GAO report illustrates the current status of the program.

OSD issued implementary guidance to the services on September 2, 1977. The major provisions in the guidance included the following:

--the single manager's procurement responsibility would begin once an item was type classified for production, even if the type classification was for limited production.

--each service's budget submission would identify the ammunition procurement funds to be furnished, upon receipt, to the single manager.
--the single manager would establish a single national inventory control point and national maintenance point.
--the services would assist in determining single manager phase II personnel requirements.
This guidance encountered considerable resistance and none of the provisions were implemented at the time of our review, November, 1979 [2:11].

As can be gleaned from the above quotation, the progress of the SMCA program has been slow. In particular, due to the services' objections, the following conventional munition groups are excluded from the single manager's responsibilities:

1. Guided missiles.
2. Naval mines and torpedoes.
3. Cartridge and propellant actuated devices.
4. Chaff and chaff dispenser.
5. Guidance kits for bombs or other ammunition.

Consequently, the services are responsible for a substantial number of munition items, many of which are transferred under FMS. The Navy and Air Force still retain responsibility for the procurement, production, and inventory management for several thousand items and the Army and Marine Corps for several hundred (2:18). The reader may refer to Appendix B for a breakdown of ammunition items subject to and not subject to single manager assignment.

Future Implications of SMCA

If and when the single manager's control increases, his importance within the realm of FMS of munitions will also increase. With appropriate management the system may evolve into an efficient national operation with the capability of streamlining the FMS of munitions. This streamlining could well have a substantial impact in resolving a number of the current problem areas.

With the SMCA concept as a backdrop, the remainder of this chapter will delve into a number of the administrative aspects of the USAF FMS of munitions program.

Types of USAF Munitions Cases

General

The case identifier, defined in Chapter I, provides the means to identify the foreign purchaser, the implementing DOD component, the category of articles of services being sold (17:4-1). In this regard, the first letter (Alpha Code) of the USAF case designator is highly significant. This Alpha Code depicts both the category of articles/services and the LOA preparing activity.

The following are the Alpha Codes relating to, and the agencies which prepare the Letter of Offer and Acceptance (LOA) for, the different types of Air Force FMS cases (13:4-3 to 4-8).

<u>Alpha Code for Designator</u>	<u>Who prepares the LOA</u>
"A"--Munitions (Ammunition, bombs, rockets, etc.)	HQ USAF/PAI
"B"--Spare Parts	AFLC ILC
"C"--Cartridge Actuated Devices and Propellant Actuated Devices	AFLC ILC
"D"--System sales of Communications, Electromagnetic, Meteorological (CEM) facilities	HQ USAF/PAI
"E"--Support equipment	AFLC ILC
"F"--Training films and film strips	AAVS/DO
"G"--Technical services under AFLC cognizance (USAF or contractor)	AFLC ILC
"H"--Transportation services, other than ferry	HQ USAF/PAI
"J"--Aircraft ferry services	HQ USAF/PAI
"K"--Follow-on spares support under the Cooperative Logistics Supply Support Arrangement	AFLC ILC
"L"--Equipment	AFLC ILC
"M"--Programmed depot and emergency repair, overhaul, and return of major items	AFLC ILC
"N"--Follow-on engineering support	HQ USAF/PAI

"P"-Publications	AFLC ILC
"R"-Spare parts case	AFLC ILC
"S"-Aircraft system sales	HQ USAF/PAI
"T"-Training	HQ USAF/PAI
"U"-Reserved	
"V"-Class IV Modifications	AFLC ILC
"W"-Class V Modifications	HQ USAF/PAI
"X"-Trust Fund Account	AFAFC/SAAC
"Y"-System sale (other than aircraft or CEM cases. This case includes missiles.)	HQ USAF/PAI
"Z"-Leases under 10 USC 2667 (Assigned for control and management and is not FMS)	HQ USAF/PAI

In Chapter I, the authors defined the term "munitions sales case" to include tactical missiles. From the coverage of above USAF Alpha Codes, it can be seen that the definition relates to two codes: "A" for munitions and "Y" for missiles. These two areas are highlighted in the material which directly follows.

"A" Cases

"A" case is the term utilized within the USAF FMS arena to identify a case dealing with munitions (such as ammunition, bombs and rockets). "A" cases are processed as

a defined firm order case (13:4-3). A defined order case is:

. . . one in which the items, services or training is specified/quantified by the purchaser in the Letter of Request and subsequently stated explicitly on the Letter of Offer and Acceptance (DD Form 1513). A defined order case normally requires a complete price and availability study by separately deliverable line items on the case. This study can range from extensive efforts, including contacts with potential contractors, to determining the latest most representative procurement price and/or applying an appropriate inflation factor [11:12-5,12-6].

The use of a defined order case, as opposed to a blanket order FMS case, for "A" cases provides for stricter management in the critical area of munitions. This is because the items and exact amount of those items must be explicitly stated on the LOA.

In the research survey covered in Chapter III, the reader will observe a question on the use of only defined order cases in dealing with munition cases.

"Y" Cases

"Y" case is the term utilized within the FMS arena to identify a case dealing with a system sale (other than aircraft or CEM cases). This case is used for missiles, Electronic Counter Measure (ECM) pods, special purpose vehicles, other end items that require concurrent spare parts, training, and complex technical assistance (13:4-7).

In this research, the concern with "Y" cases is the fact that they are utilized for missiles. Missiles, similar to munitions under "A" cases, are handled as a defined order case.

Flow of USAF Munitions Cases

In order to examine the basic elements and interactions associated with FMS munitions cases, the FMS "case flow" will now be addressed. The case flow starts with the Letter of Request and ends with case closure.

Country Letter of Request (LOR)

A LOR is originated by the Foreign Government (FG) requesting items through FMS. The LOR is routed through diplomatic channels to the State Department. When the State Department approves request for further processing, it is forwarded via the Defense Security Assistance Agency (DSAA) to the Department of the Air Force (11:9-13).

Several points which may be addressed by the FG in the LOR or at a later date in the processing thereof, were incorporated in the research survey. Those points are included in questions covering offset agreements, transportation, the FG specifying new/unused munitions and requesting of non-standard (not in U.S. inventory) items.

Review of LOR by Headquarters USAF

The focal point within the Air Staff which is responsible for preparing the LOA for both "A" and "Y" cases is the Directorate of International Programs (HQ USAF/PAI). This directorate is also the initial Air Force entity to review the LOR. Upon receipt of the LOR, HQ USAF/PAI will request a Price and Availability (P&A) study (13:8-2). Simultaneously, a review is conducted by the Air Staff Munition Office (HQ USAF/LEYW). This review results in the munitions items requested being checked against the Non-nuclear Consumables Annual Analysis (NCAA). If the items requested can be filled from stocks in excess of the NCAA objective, then the request can be filled from inventory and/or ongoing production. Sales of munition items for which the NCAA objective has not been achieved (not excess) will normally be filled from new production. Furthermore, proposed sales which would reduce the USAF inventory below NCAA objective must be approved by HQ USAF/PAI and LEY (13:8-2).

Development of Price and Availability (P&A)

Difference between P&A and Planning and Review (P&R) Data. The purpose of P&A data is to provide the purchaser with the best estimate of costs and delivery times. This estimate includes all cost elements and will be as

valid as processing time allows (13:6-4). In contrast, P&R data generally represents gross estimates. P&R data is computed on the basis of available information, often using standard USAF factors and formulas in the absence of detailed information. P&A usually leads to the preparation of a LOA; P&R does not.

Responsibility. In USAF "A" cases, the actual P&A determination is made by the applicable service program/system/item manager; for example, the ALC, AFSC product division, etc. (Note also that under the SMCA concept, the U.S. Army may provide inputs to the USAF for incorporation into the P&A.) A key element in this P&A process is the identification of all required items and services (11:9-16).

In "Y" cases, depending on the size and diplomatic importance of the case, the responsibility may be assigned as in the "A" case or, due to the complexity of the case, may be assigned Program Management Direction (PMD). In the latter instance, a Major Command (e.g., AFSC, AFLC) may be tasked as lead command to prepare the P&A or draft the LOA for an FMS program (13:7-7). The primary purpose of the lead command is to improve the development of P&A data and enhance interagency coordination (13:7-7).

Source of Supply. When the FMS purchaser buys stocks through FMS, it is usually from the "wholesale" or depot management level. In rare instances, "retail" items

(those stocks at the base level), may be sold through FMS to meet urgent contingencies. In those more routine instances in which the depot is not in an excess stock position, the source of supply is new procurement.

Lead Time and Availability. A block is provided on the LOA to insert the appropriate lead time (in months) from the date of order of material to the date of delivery (11:11-4). This data is normally supplied by the P&A preparing activity. Lead time, of course, is greatly impacted by the source of supply (i.e., stock or new procurement). Two questions in the survey refer to lead times.

Pricing. The pricing of an FMS case is the responsibility of the P&A preparing office or activity. For a major system (i.e., missiles) sale case reflecting the signature of a Headquarters USAF representative, the pricing data is furnished by a subordinate command having responsibility for procurement or issuance of the munition. It is important to recognize that the prices reflected on the LOA are only estimates; the actual cost reported during the delivery reporting cycle may be higher or lower. Contained within the research survey are several questions pertaining to the USG recovery of FMS program cost.

Special Terms and Notes. The sale of munitions normally requires the establishment of understanding between the USG and the purchaser regarding logistical arrangements and support (11:11-7). This subject must be addressed in the "Notes" to the LOA to delineate USG responsibilities; to specify the type of equipment being provided, special transportation requirements, hazardous cargo requirements, and self-insurer policy; and to identify subsequent actions which must be taken by both the USG and the purchaser (11:11-8).

Impact of Non-Standard Items. In the sale of munitions in support of older weapon systems no longer in the U.S. inventory, the cost per munition item may be abnormally high. This is due to lack of stock and the small production runs required to fulfill the FMS case requirement. In these cases the difficulty in finding a contractor will usually increase required lead times.

Preparation of the Final LOA

The LOA is written by the office designated by the implementing service. "A" and "Y" case LOAs are written by HQ USAF/PAI.

The final reviews of LOA are conducted by the several agencies.

First, there is a preliminary DSAA review to determine if the case is of a dollar value which must be

presented to Congress. Second, the Department of State (DOS) conducts a review to obtain, if required, Presidential approval of proposed sales prior to the notification of Congress. Third, other DSAA coordination actions are conducted. DSAA compiles proposed LOAs for a final review by the Department of State Bureau of Politico-Military Affairs (11:9-20). Following this action, if Congress fails to object to the proposed sale by concurrent resolution within thirty calendar days, the DSAA Comptroller "countersigns" the LOA and forwards it to the Air Force for submission to the requesting government. Concurrently, the Security Assistance Accounting Center (SAAC) enters the case into the automated data reporting system as having been offered (11:9-20).

Acceptance of Offer by Purchaser

If the offer is acceptable, the purchaser must complete and sign the LOA and forward copies to the Air Force and to SAAC with any required initial payment.

Upon receipt of the properly signed LOA and the case deposit, SAAC enters the case in the DSAA automated data file in "accepted" status. The case is then ready for implementation (11:9-21).

Implementation of the LOA

Once the LOA is accepted by the foreign purchaser, SAAC, upon receipt of a DD Form 2060 (FMS Obligational

Authority Request), issues Obligational Authority (O/A) to Headquarters USAF/ACMS. USAF/ACMS, in turn, delegates the O/A down to the major command (e.g., AFLC, AFSC, etc.). O/A is required before any procurement request can be issued, or any items/services can be delivered or accomplished using USAF on-hand resources (11:9-22, 9-23). As to the accomplishment of related implementation actions:

The actual procurement and supply actions for the FMS program are carried out by USG procurement and logistics activities in the same manner and using largely the same internal management organizations as for USG programs. Program directors and system managers may establish separate offices or positions within their organizations to provide overall surveillance of the FMS program and serve as an interface with other organizations involved in managing the program, often including the MAAG and the customer, as well [11:9-22].

Program Reviews

The program review is a technique used by the program manager to enable the USG and the customer to assess the overall program status so that appropriate management actions can be exercised to fulfill the overall objective of the FMS program (11:9-27). The program reviews are oriented toward identifying problems as early as possible, as illustrated by the following guidance:

Discussions include, but are not limited to, weapon system confirmation, development status, performance, schedule, contracting, finance, spares procurement, support equipment, technical data, training programs and training hardware, status of in-country facilities/construction problems, action items and any special subjects deemed necessary [11:9-27].

The reader will recognize several of these areas as being addressed in the survey.

Case Closure

Once all material has been delivered and all services have been performed, the case is a candidate for closure. The closure phase involves the final balancing of all records and a determination that all costs have been paid by the foreign country and reimbursed to the applicable USAF activity.

Summary

In this chapter, the authors have provided a background covering many of the basics of the USAF munitions case environment. In the discussion of the SMCA concept, distinction was made as to which categories of munitions items fall under SMCA responsibility and, conversely, which ones are retained for management by the individual military services. This distinction as to management responsibility, of course, impacts on the implementation of USAF FMS munitions cases.

In the discussion of the various types of USAF FMS cases, it was noted that two types essentially relate to munitions (including tactical missiles); these include the "A" and "Y" Alpha coded cases. The reader was then introduced to the "flow" of USAF munitions cases--from the preparation of the LOR to case closure.

The primary purpose of presenting this background was to enable the reader to better relate to the topical content of the survey which is introduced in the next chapter.

CHAPTER III

RESEARCH DESIGN

Introduction

The reader has been presented, in the previous chapters, with a description of the environment and the process of FMS of munitions; with the authors' observations on the importance of these topics; and, with justification for research into that area. This chapter focuses on the details of the research conducted by the authors. The chapter begins with a discussion of the research survey which was used, focusing on its construction, the rationale for its use, and the manner of its use. The chapter then shifts to coverage of the procedures employed to analyze the data gathered with the survey. The concluding segment of the chapter describes discussions held with Allied officers familiar with U.S. FMS procedures to gather their perspectives of problems in the FMS of munitions.

Data Collection

The method chosen by the authors to obtain the data for this research effort was a survey of managers of Air Force FMS munitions cases. This section presents the rationale for the selection of the survey method; the

construction of the survey itself; and a description of the sample and the manner in which it was chosen.

The Survey Method

Advantages of a Mail Survey. The decision to utilize a mail survey was made in light of the advantages and disadvantages of this technique. The advantages of a mail survey in terms of specific application to this research are as follows:

1. Mail questionnaires could be sent to persons in widely scattered locations covering a large geographical area (1:77). Since this survey involved contacting personnel scattered throughout various Air Force agencies, as well as Joint-Service overseas Security Assistance organizations, the decision to use a mail survey was justified, in part, from this standpoint.

2. Prospective respondents could be reached at relatively low cost (1:77). In research of this nature, suitable information should be gathered in the most economical manner possible.

3. No interviewer is present to bias the answers or to make mistakes in recording information (1:78).

4. Personnel opinions could be obtained more completely and accurately in an unsigned mail questionnaire (1:78). Whenever someone from outside an organization

attempts to learn or discuss the problems involved with managing that organization, a certain amount of resistance to a free flowing discussion can be expected.

Disadvantages of a Mail Survey. Several potential shortcomings of the mail survey method have a possible bearing on this research effort. The authors have attempted to address each of them in the following paragraphs:

1. The fact that some persons are less likely to respond than others to a mail questionnaire resulted in a sizeable percentage of nonreturns. As delineated in Chapter IV, the total response rate for this research effort was 48 percent.

2. In a mail survey of this nature, questions may be misinterpreted if they are misunderstood (1:78). Accordingly, one aspect of the construction of the survey was a review of all vocabulary and terminology to insure that it was common to, and understood by, the target population.

3. A mailing list that contains up-to-date addresses of the persons it is desired to reach may be difficult and expensive to obtain (1:78). This obstacle was resolved, in part, when the Defense Institute for Security Assistance Management (DISAM), the sponsor of this research, provided the research team with the complete addresses of all security assistance agencies on its quarterly newsletter distribution list. The DISAM Newsletter,

the address list for which was developed by DISAM in conjunction with DOD headquarters activities, has been published over the past two years and reaches a worldwide audience.

4. The degree of representativeness of a sample obtained by mail may be difficult to determine (1:78). Still, the degree of representativeness of responses, regarding a fair inclusion of subjects from each agency, can be projected from returned responses.

In light of a comparison of the advantages and disadvantages of the mail survey method, the authors concluded that it was the best procedure to employ in this effort.

Survey Instrument Construction

Types of Questions. Two types of questions appear in the survey constructed for this research effort (shown in Appendix C). The first is demographic in nature. It allows the development of a profile of respondents by grade/rank, time spent in the FMS arena, and frequency of contact with FMS munitions cases. A question pertaining to the agency of the respondent aided in identifying non-responses from particular agencies.

The second type of question pertains to the subject of the research, which is the identification of problems encountered by the Air Force as a whole, and by individual

agencies within the Air Force, in the Foreign Military Sales of munitions. Each question identifies a particular problem area.

Question Content. The content of the demographic questions was designed to provide information considered by the authors to be of interest in identifying and categorizing the pool of respondents.

Questions addressing the FMS munitions problem areas were developed through an iterative process. Research by the authors into current FMS literature provided some potential problems. Discussions with personnel currently working in the FMS field allowed an expansion of this list. From this, a draft set of questions was prepared. This draft survey was critiqued by a panel of individuals at DISAM knowledgeable of the FMS arena. During this critique, suggestions into other problem areas were made, and existing questions were evaluated for clarity, consistency of terminology, and use of terminology common to, and understood by, the target population. The feedback from this DISAM panel was used to produce the final set of problem-area questions for the survey.

Types of Answers. The demographic questions allowed responses in any of what the authors and DISAM personnel have judged to be the categories into which the

respondents would fall. The problem-area questions allowed for any of several responses.

A five-point Likert Scale of possible answers, ranging from "Strongly Agree" to "Strongly Disagree," was provided for each respondent to express an opinion on the statement that the topic in the question is, in fact, a genuine problem for the Air Force as a whole in the administration of FMS munitions cases. A similar scale was provided for the respondent to express an opinion regarding the topic as a problem to his/her own agency.

Two other options existed for the respondent. An answer of "Not Applicable" could be entered whenever the respondent considered it appropriate. Further, there was space for a narrative comment after each question, and space at the end of the survey for comments on any problem areas not cited.

Validity and Reliability. For an instrument to be valid, it must measure what it was intended to measure. For it to be reliable, it must provide consistent results when applied to different samples at the same time, or to the same sample at different times (5:119-120).

The measures of validity which are relevant to the survey used in this research can be categorized as content-related and criterion-related. Content validity relates to whether or not the instrument provides an adequate coverage

of the matter under study, and offers the respondent a choice of all relevant positions on the topic (5:120). Emory (5:121) holds that the determinations of content validity rest with the authors of an instrument, or a panel of knowledgeable persons. The efforts of the authors in their own research, and the efforts of the DISAM panel of experts in their critique of the draft questions, all contributed to an enhancement of content validity. The Likert Scale, with its wide range of opinion positions, the "Not Applicable" option, and the opportunity for a narrative response all allowed for expression of any opinion that one could hold on each question.

Criterion validity deals with the appropriateness of measures used for estimating purposes (5:121). One purpose of this research was to identify the importance of problems relative to each other. While many ways of measuring importance can be postulated, the authors chose the opinions of persons knowledgeable in the field as the measure, and the perceived importance of the problems as the characteristic being measured.

A limiting factor of the validity of any instrument is its reliability: How well does it measure what it has been constructed to measure? As cited above, an instrument can be said to be reliable if concurrent administration to different samples, or repeated administrations to the same sample, yield similar results.

The overview of the FMS environment offered in Chapter I demonstrates its volatility. Developments on the international scene in Iran and Afghanistan late in 1979 demonstrate the rapidity with which this environment can change. Along with such changes can occur changes in the United States arms policy. Such changes can well affect the problems of those individuals administering the FMS program. In a real-world environment, the question of stability over time of the results of this research, i.e., the relative importance of each of the problems compared to the others, becomes somewhat moot. It should not be expected that the relative importance of these problems will remain the same over time.

The question of equivalence is more easily addressed. While in a strict sense the authors did not consider it feasible to administer the survey to two samples and compare the results, an opportunity existed to treat the respondents as two samples for analytical purposes. A random split of respondents into two groups, and the subsequent analysis of these two "samples," offered an indication of the internal consistency of the response data.

Sampling Plan

A stratified judgment was used by the authors to determine those Air Force managers in the FMS field

who were approached to respond to the survey. The first stratification involved a determination of a list of Air Force agencies, or types of agencies, representative of all those involved in the processing of Air Force FMS munitions cases. This determination was made jointly by the authors and personnel at DISAM. A complete list of addresses to which the surveys were sent is presented in Appendix D.

A packet with a cover letter and the surveys was sent to each of the addressees. The number of surveys mailed to each addressee was based on an estimation by the authors and DISAM personnel of the number of individuals there involved in FMS munitions cases. Each packet was addressed to the head of the specific branch or office containing the potential survey subjects. This individual was asked to select, based on his knowledge, the personnel most qualified to respond to the survey. This selection within the agency represented the second stratification of the sample selection. The subjects who completed the surveys were then asked to return them to the authors.

Data Analysis

Objective

The objective of the statistical analysis of the data provided by the respondents to the survey was a series

of rankings of the twenty-nine questions of the survey. There is one ranking reflecting the opinions of all respondents, as a single group, on questions pertaining to the Air Force as a whole. There are also intragroup rankings of questions affecting the specific categories of agencies by respondents from the agencies involved. Some pooling of responses from agencies with similar functions was done where necessary to create groups of a size adequate for analysis.

A secondary objective of the analysis was to determine the strength of the agreement which respondents in each category have on the ranking of the questions, i.e., how much the respondents agree that a given question is the most important, another is the second most important, etc.

Statistical Method

The Kendall Coefficient of Concordance Test (hereinafter called the Kendall Test) was chosen by the authors as being best able to produce statistical results which fulfill the objectives cited above. Given more than two rankings of the same set of objects or characteristics, the Kendall Test may be used to determine the level of agreement among the rankings, and to test for agreement or lack of it at a given level of significance (1:301).

The statistic W computed by the Kendall Test is the measure which indicates the level of agreement among the

rankings on the position of each item. It is computed as shown.

$$W = \frac{\sum_{j=1}^N (R_j - \frac{\sum R_j}{n})^2}{\frac{1}{12}k^2(N^3 - N) - k\sum T}$$

R_j = The sum of the ranks of the j^{th} item in all lists of ranks. The numerator of this expression, then, is the sum of squares of observed deviation of each R_j from the mean value of R_j .

k = The number of rankings.

N = The number of items or characteristics ranked.

T = The correction factor for ties, computed as:

$$T = \frac{\sum (t^3 - t)}{12}$$

where t is the number of observations in any list tied for a given rank (8:231,235).

From the values of W , k , and N the test statistic Q can be computed as: $Q = k(N - 1)W$. For values of k greater than seven, Q is distributed approximately as Chi-square with degrees of freedom $N - 1$ (1:306). The appropriate hypothesis test would be:

H_0 : No agreement exists among rankings.

H_1 : Agreement does exist among rankings.

The decision rule would be:

If $Q \leq \chi^2(1 - \alpha; N - 1)$, conclude H_0 .

If $Q > \chi^2(1 - \alpha; N - 1)$, conclude H_1 .

Kendall, as cited by Siegel (10:238), held that when H_0 could be rejected, valid conditions exist to create one consolidated ranking by ordering the items according to the values of R_j : with the smallest R_j being ranked at the top and the largest R_j being ranked at the bottom of the consolidated list.

However, a strict hypothesis test was not conducted for this research. P-values associated with the null hypothesis were determined and reported. The rationale for this relates to the objectives of the research. Running the Kendall Test and failing to reject the null hypothesis would create a situation where no procedure existed within the scope of the test for creating a consolidation of rankings into a "corporate opinion." It is not the goal of this research to merely reject or fail to reject the null hypothesis, but to be able to offer the level of significance at which the null could be rejected. The p-value in such a case would be the lowest level of significance (alpha risk) at which the null hypothesis could be rejected. In other words, it would be the risk of rejecting the null when it was actually true (8:11,14).

Computer Analysis Program

The equations for the computations of the Kendall Test were incorporated into a FORTRAN program written by the authors. A copy of the coding of this program is presented in Appendix E for those readers who are conversant with FORTRAN and who may wish to use the program in other research efforts.

Data File Creation

Separate computer data files for the statistical analysis program were created for the respondents' first and second ratings under each survey question.

One file contains the ratings by all respondents of the problems in the survey questions as they impact the Air Force as a whole in the FMS of munitions. The second file, in which respondents are grouped by agency or category of agencies, contains the ratings by each respondent of the problems as they impact the agency to which the respondent is assigned. A third file, which is an extract of the first, contains the ratings of only those respondents who indicated that they deal with FMS munitions cases weekly. This file was used to create a ranking of problems by only those individuals in the sample with the most frequent contact with FMS munitions cases. A listing of the contents of each file is presented in Appendix F for those readers who may wish to replicate or expand upon the

analysis reported in this thesis. Also offered in that appendix is an explanation of how the file values were created, and how to equate them to specific responses on the survey.

Foreign Officer Opinions

The opportunity existed for the authors to approach a number of Allied officers currently working in the FMS arena as interfaces with their counterparts in the Air Force Logistics Command. The FMS process is, after all, a buyer and seller relationship. The buyer can sometimes offer insights, beyond the perspective of the seller, on the seller's own problems. These discussions are summarized in Appendix H.

While the information gained from the Allied officers cannot be integrated into the statistical analysis, it is offered as an appendix for those readers who may wish to see a slightly different perspective from the one presented in the research analysis.

Compilation of Respondents' Comments

It was expected that some of the individuals answering the survey would choose to offer remarks on either individual questions, or on topics not addressed. The possible variety of responses in this area precluded any meaningful contribution to the statistical analysis. Such comments, however, can be extremely valuable in shedding

light on possible solutions to problems, or in identifying problems not covered in the survey.

Comments made by the respondents appear in Appendix G. For the convenience of the reader, the comments shown there are organized by the question to which they relate, and by the agency of the respondent who offered the comment.

Assumptions and Limitations

Assumptions

1. The survey was constructed in such a way as not to bias the individuals' responses.
2. Answers provided are honest and based on the knowledge and experience of each respondent.
3. The survey data obtained from the respondents are at least ordinal level.

Limitations

1. Because the survey was restricted to only problems in Air Force FMS munitions cases, no generalizations can be made for Air Force FMS cases of other commodities, or for munitions cases of other military services.
2. No statistical inferences can be made on any problems entered only as comments, since not all respondents have given an opinion on them.
3. Because of time restrictions impinging upon this research effort, respondents were not re-surveyed on

additional problem areas revealed by their comments provided on the original survey. This limitation restricts the ability to draw inferences about any additional potential problem areas gathered in this way. However, the documentation of these comments may prove valuable in future research into this area.

4. Lack of a true random sample of FMS munition supporting personnel may introduce bias in the results. Furthermore, no method exists within the scope of this research to determine if the respondents who answer the survey are truly representative of the target population, i.e., the personnel with the most experience in the administration of Air Force FMS munition cases.

Summary

This chapter has offered the reader a view of the manner in which the research data was gathered and analyzed. What follows will be a presentation of the results of this analysis, and the authors' views on the meaning of these results.

CHAPTER IV

RESULTS AND ANALYSIS

Introduction

This chapter has a three-fold purpose. First, the authors present a description of the respondents to the survey. This focuses on response rates by agencies sampled, and on a demographic profile of the respondents. Next, the results of the statistical analysis are shown. These consist of the problems from the survey, as ranked in order of importance by various categories of respondents. Third, the authors discuss the results, concentrating on the problems perceived by all respondents as being most important to the Air Force as a whole in the FMS of munitions.

Profile of Respondents

This segment provides a perspective of those Air Force FMS managers who responded to the research survey. First, response rates are shown for the agencies or categories of agencies which were sampled. Following that, the authors present a demographic profile of those respondents whose opinions formed the data base for the statistical analysis phase of this research.

Survey Response Rates

Table 1 shows the number of surveys mailed to each agency or category of agencies on 30 January 1980; the number received by 11 April 1980; and the number of those useable for statistical analysis. Counted in the total number of responses in each category were those which, for any of a variety of reasons, were not useable for statistical analysis. In this regard, some of these responses were from individuals who did not, and never had, worked in the administration of FMS munitions cases. Others were from respondents who offered only comments on each question, but no ratings. Several were returned with all problems marked "Not Applicable."

This initial editing by the authors eliminated about one-third of all responses from statistical consideration. Any worthwhile comments found in this group of surveys were, of course, retained for compilation in Appendix G.

Referring to the survey, the one useable response from the category "Other" was from TAC. It was inadequate, in itself, for the Kendall Test, as a grouping of at least three rankings is required. The respondent in this case indicated that his knowledge of FMS munitions cases came from his previous assignment in a MAAG. Accordingly, his answers were incorporated for the Kendall Tests with those of respondents from MAAGs and missions.

TABLE 1
SURVEY RESPONSE BY CATEGORY

Agency or Category of Agencies	Surveys Mailed Out	Total Surveys Returned		Useable Surveys Returned	
		Nbr	Pct	Nbr	Pct
Headquarters, USAF	10	5	50%	5	50%
Unified Commands and Service Component Commands	17	7	41%	6	35%
Headquarters, AFLC	9	7	78%	5	56%
Air Logistics Centers	26	12	46%	9	37%
International Logistics Center	11	6	55%	6	55%
Headquarters, AFSC, ASD, ESD	17	12	70%	7	41%
MAAGs, Missions, ODCs	100	43	43%	24	24%
Others	3	1	33%	1	33%
Total	193	93	48%	63	33%

Since it is not known exactly how many individuals are in the entire target population, i.e., all individuals in the Air Force handling FMS munitions cases, the authors cannot address the question of what fraction of the population is represented by the statistically-useable sample. This inability is one of the reasons for asking the demographic questions: to enable the authors to judge the familiarity of the respondents with Air Force FMS munitions cases, and therefore to judge how much value to place in the collective opinions of the respondents. This matter of demography is the second topic addressed in this chapter.

Demographic Profile

Table 2 illustrates the demographic profile of the pool of respondents used for statistical analysis. The most important single fact which emerges is that almost two-thirds of the respondents claim to deal with FMS munitions cases at least weekly. This frequent contact, the authors hope, allows the respondents to form opinions well-grounded in actual experience.

The profile of respondents by rank/grade and time in the Security Assistance arena shows a wide distribution over all categories. This variety should provide for a wide range of perspectives among the respondents, and enhance the usefulness of the final results of the research.

TABLE 2
DEMOGRAPHIC PROFILE OF THE 63 RESPONDENTS
USED IN THE STATISTICAL ANALYSIS

Question	Category	Frequency	Percent
How long have you worked with the Security Assistance Program (in years)?	5 or more	17	27%
	4	11	17%
	3	9	14%
	2	12	19%
	1 or less	14	23%
Military or Civilian: What is your rank/grade?	Col/GS-15	6	10%
	LC/GS-14	19	30%
	Maj/GS-13	11	17%
	Capt/GS-12	16	26%
	LT/GS-11 or lower	11	17%
How frequently do you work with FMS munitions cases?	Weekly	40	63%
	Monthly	6	10%
	Quarterly	9	14%
	Annually	8	13%
	Never	0	0

One question from the survey not shown in Table 2 is that of whether or not the respondents believed, prior to taking the survey itself, that problems did, in fact, exist in the management of FMS munitions cases. Over 85 percent of the respondents answered "Yes." Those who answered "No" or "Don't Know" did indeed indicate in the survey that some areas were indeed problems. For that reason, neither of these latter two answers caused a respondent to be edited out of the useable pool of responses. The authors surmise that the specific questions on problem areas may have "jogged the memory" of those respondents who had earlier answered that no problems existed.

Results of Kendall Test Analysis

This section contains the results of the Kendall Tests performed on the answers of those survey respondents who offered statistically useable opinions. For the convenience of the reader, two topics are provided prior to that as information. First, a discussion is offered regarding why the respondents were categorized as they were for various phases of the test. Second, the questions from the survey are addressed to refresh the reader with the content of each question. During the discussion of the intermediate phases of the analysis, the reader may wish to refer to this list.

Categorization of Respondents for Analysis

Three guidelines were kept in mind when the authors created the eight categories of respondents for the Kendall Test. First, respondents from agencies with similar functions in the processing of Air Force FMS munitions cases were grouped together. Second, this grouping was done only when necessary to create categories with enough respondents in them for a valid application of the Kendall Test. Although, strictly speaking, this could have been as small as three, the authors decided upon five as the minimum number of respondents in any one category. Third, the authors did not group respondents more than necessary, as potentially valuable information would have been lost by doing this.

Shown below are the eight categories created for the first Kendall Test:

1. Headquarters, U.S. Air Force.
2. Unified Commands and Service Component Commands.
3. HQ, Air Force Logistics Command.
4. Air Logistics Centers.
5. International Logistics Center.
6. HQ, Air Force Systems Command; Aeronautical Systems Division, Electronic Systems Division.
7. MAAGs and Missions.
8. Offices of Defense Cooperation. The division between this category and the MAAGs and Missions is based

only on the title of the offices sampled. In most, if not all, cases, the MAAGs and Missions are larger offices.

Each category was analyzed by itself to create a consolidated ranking of problems, in order of importance, which reflected the opinions of the respondents in that category. The ranking reflects the importance of the problems to the respondent's own agency.

For the analysis of the respondents' opinions on the importance of problems to the Air Force as a whole, all respondents were treated as one category. Since one respondent chose to offer opinions only on problems of his own agency, this category has one less respondent in it than the total of the eight categories listed above (62 versus the total of 63 reflected in Table 1, page 52).

Survey Question Topics

Presented below is a capsule description of the topic of each of the twenty-nine questions on the research survey contained in Appendix C. Since it is not practical to refer to the questions by topic in the charts which show the rankings in order of importance, the reader may wish to review the topics at this point before proceeding to the analysis discussion. At the end of that discussion, the questions which contain the problems considered by the respondents to be the most important ones facing the Air

Force as a whole are discussed in the order of perceived importance.

The topics addressed with the twenty-nine questions, in sequence, are:

1. Lead time.
2. Munitions experts in FMS agency.
3. Firm order cases.
4. Training of purchasing nation personnel.
5. Purchasing nation personnel understanding of U.S. directives.
6. Purchasing nation personnel following U.S. directives.
7. Long-range planning.
8. Cost recovery.
9. Technical order changes.
10. U.S. officers at country reviews.
11. Initial technical order provisioning.
12. Cost recovery.
13. Cost recovery.
14. Proof of delivery.
15. New and unused munitions.
16. Follow-on support.
17. Prime contractor at program reviews.
18. Cost recovery.
19. Notifications of shipment.
20. U.S. vs. purchaser procurement methods.
21. Defective or incomplete shipments.
22. Cost recovery.
23. Non-standard munitions items.
24. Offset agreements.
25. Loss and damage claims.
26. Cost recovery.
27. Lead time.
28. Computerized supply system.
29. Cost recovery.

Intra-category Rankings of Problems

The first segment of the output of the analysis program presented to the reader will be the eight individual category rankings. From these, the analysis will proceed to the one category made of all respondents' opinions on the

problems for the Air Force as a whole in the FMS of munitions.

Appendix I presents the actual output from the run of the analysis program which performed the Kendall Test on each of the eight categories. For the convenience of the reader, the information regarding the ranking of the problems has been extracted and is presented in Table 3. The table compares the eight rankings of questions, one ranking from each category of respondents. Also presented is the p-value associated with the test statistic Q for each ranking.

In seven of the eight categories in Table 3, the p-value is less than .02. This allows for a strong degree of certainty to accompany the conclusion that the ranking of questions shown does indeed reflect a consensus among the members of that category. In the eighth, HQ USAF, the size of the p-value would make such a conclusion wrong more often than right. For this category, the ranking of the questions is presented only for comparison with the others. Although this order is, technically, the result of the rank-order procedure, it should NOT be assumed that the order reflects a consensus. In other words, a tremendous diversity of opinion exists among the respondents from HQ USAF regarding what the problems of that agency in the management of FMS munitions cases really are.

TABLE 3
SUMMARY OF INTRA-CATEGORY PROBLEM RANKINGS

Rank of Ques-tion	Category of Respondents							
	Headquarters USAF	Unified Com- mands and Service Compo- nent Commands	Headquarters AFLC		AICs	IIC	Hq AFSC, ASD, ESD	MAAGs Missions
	Question Number							
1	20	21	23	23	23	20	20	20
2	15	27	21	15	15	15	27	7
3	7	20	20	27	20	23	7	15
4	24	23	27	1	28	7	4	27
5	21	7	26	28	21	1	1	21
6	4	4	1	7	27	27	25	23
7	6	2	15	16	7	24	15	2
8	28	25	7	25	1	12	28	29
9	9	17	28	20	6	25	17	5
10	14	28	8	14	4	29	11	11
11	2	5	24	29	5	5	21	1
12	29	16	29	2	26	14	16	13
13	27	19	10	21	3	9	24	25
14	3	15	22	5	18	6	9	3
15	18	13	18	8	12	17	23	14
16	16	26	12	17	24	28	18	17
17	5	29	5	4	8	16	13	28
18	23	11	14	24	29	26	10	24
19	12	24	11	10	19	3	2	22
20	8	6	16	3	22	21	26	8
21	1	12	19	26	13	4	12	12
22	10	10	3	12	17	8	5	9
23	13	8	4	18	10	11	19	4
24	26	3	9	19	14	2	8	18
25	11	9	17	6	2	10	14	26
26	17	14	25	22	16	22	29	19
27	19	18	6	13	9	18	6	16
28	25	22	13	9	11	19	3	10
29	22	1	2	11	25	13	22	6
p-value	<.70	<.01	<.02	<.01	<.02	<.01	<.01	<.01

Inter-category Rankings of Problems

The computer output from the performance of the Kendall Test on the appropriate data file is also presented in Appendix I. For the ease of the reader, the most important information has been abstracted, and is presented in Table 4. In addition to the ranking of the questions as perceived by all respondents, Table 4 also presents the ranking as seen only by those respondents who handle FMS munitions cases weekly. These respondents were extracted from the entire pool, and a Kendall Test was performed on them as a group to learn if there was agreement between this sub-group and the group as a whole.

Recall from the rankings in Table 3, page 60, that questions 20, 23, 21, 7, 15, and 27 were the ones which seemed to appear most often near the top of the individual category lists. Table 4 shows that these six questions are exactly the ones which the respondents ranked as the most important to the Air Force as a whole. These six questions also appear in the top-seven segment of the respondents handling cases weekly.

Regarding the existence of a consensus, the two p-values, each of which is less than .001, allow a conclusion with an extremely high degree of certainty that a consensus exists regarding the ordering of the items. It should be noted also that the same five questions are ranked

TABLE 4
SUMMARY OF RANKINGS OF AIR FORCE-WIDE PROBLEMS

Rank of Ques- tion	Category of Respondents	
	All Respondents	Respondents who Handle Cases Weekly
	Question Number	
1	20	20
2	7	7
3	27	23
4	23	15
5	15	27
6	21	1
7	1	21
8	4	28
9	28	24
10	5	2
11	24	5
12	2	4
13	25	16
14	16	25
15	3	11
16	17	8
17	29	14
18	8	17
19	11	6
20	6	29
21	26	26
22	9	10
23	12	9
24	14	3
25	10	12
26	19	19
27	18	18
28	22	22
29	13	13
p- value	<.001	<.001

in the top five of each list in Table 4, albeit in a different order.

Discussion of Survey Questions

General

This final segment of this chapter concentrates primarily on the content of the questions ranked as the top seven by all respondents. The authors will address the placement of each question in the intra-category rankings, noting which agencies or categories of agencies place it high or low in their individual rankings. Any sentiments in the respondents' comments which seem to suggest possible causes or solutions to the problem are also noted. Finally the authors will propose areas for further research which appear fruitful. After addressing the top seven questions, this section will focus briefly on the lowest-ranked group of Air Force-wide problems (i.e., the last five questions).

The authors caution the reader not to consider the wording of any survey question as the most rigorous and concise possible statement of the problem to which the question alludes. The questions were intentionally broad in their construction. This limits the conclusions which may be drawn from the fact that a given question placed high or low in any ranking. This caveat is the reason for the presentation herein only of recommendations for further study,

and not of specific causes and solutions, which must await further research into specific problems within the general areas so discussed.

The Seven Most Important Questions

Listed and discussed below are the questions which represent the seven most important problems, as seen by all respondents, to the Air Force as a whole. They are quoted verbatim from the survey, and presented in the order of importance reflected in Table 4, page 62. The reason for presenting seven, as opposed to five or ten, relates to the strength of agreement among the respondents. There is stronger agreement on which problems comprise the top seven than in which problems comprise the top ten. The strength of agreement is even lower if one considers the placement in the ranking of any problem outside the top ten. The evidence for this conclusion appears in Appendix L.

1. Question 20: The difference in the way the U.S. conducts its munitions procurements versus the procurement methods used by the purchasing country can result in misunderstandings. This question ranked first overall in respondents' views of the problems of the Air Force as a whole. All categories of respondents also ranked it in the top ten problems facing their own agencies. (Note: The ranking by HQ USAF of its problems is not quantified in

this section because of the uncertainty that the ranking actually represented a consensus.)

The only respondent comment which contained a possible cause of this problem centered on the budgeting differences between the U.S. and many other nations; that the U.S. operates on a fiscal year system not aligned with the calendar year. This misalignment was cited as a possible reason for misunderstanding on the part of purchasing nations.

Further research is certainly warranted in this area. The logical first step would be to discover which differences are perceived as being causes of the misunderstanding. The authors can offer the noted matter of different budget cycles as a possible point of departure.

2. Question 7: The lack of long range planning (3 to 5 years) for FMS of munitions cases is a problem.
As with the previous question, this one was ranked in the top ten of each by the eight categories of agencies. The MAAGs, Missions, and Offices of Defense Cooperation (ODC) all ranked it as their most important problem.

Several themes appeared more than once in the comments. One was that the purchasing country had unrealistic expectations on what lead times would be for its munitions. Another was that the lack of long range planning caused a problem because the U.S. was not aware of the

purchaser's requirements when it initiated its own purchases. It was not addressed whether or not the respondents considered this the result of the purchaser not doing long-range planning, or of not informing the U.S. of the planning it had done. The authors speculate that those respondents who deal directly with foreign personnel may consider as a problem anything which would hinder a good working relationship between the two parties. If purchasers are dissatisfied with the lead time they must endure on munitions purchases, this would certainly lead to such hinderances in the relationship.

As recommendations for further research in this area, the authors offer that a fruitful area could be that of improving the flow of information between the two parties: How the U.S. would inform the purchasers of realistic lead times; and how the purchasers could give the U.S. more information on its future munitions requirements.

3. Question 27: Actual lead time for procurement and production of many munitions items exceeds the estimated lead time (reflected in block 18, "Availability and Remarks" of the DD Form 1513) for delivery under FMS munitions cases.
As with the two previous questions, this was ranked in the top ten of every individual category ranking. In no case did it rank lower than sixth.

The same theme of the purchasing country underestimating required lead time which was apparent in comments from the last question was again seen here. The point of this problem being a hinderance to good working relations between U.S. and purchasing country personnel was emphatically made by such comments as the poor lead time estimates being a ". . . source of embarrassment to USAF reps on the end of the pipe," and that such poor estimates were making the ". . . assistance effort lose credibility." One possible cause noted was the excessive administrative time needed to process the case before the awarding of the contract. Another was that of poor time estimates by the contractor.

The obvious areas for further research are two: the methods used to estimate lead times by all parties concerned; and the amount of handling required in the processing of a case, with an eye for streamlining the process and reducing the time required.

4. Question 23: Munitions sales of U.S. non-standard (not in U.S. inventory) versus standard (in U.S. inventory) munitions items results in increased administrative cost. This question, which was rated fourth as an Air Force-wide problem, was ranked first by HQ AFLC, the ALCs, and the ILC. It was also ranked in the top ten problems also by the Unified Commands, AFSC, and the ODCs.

One point of note which appeared in the comments was that the increased costs associated with this problem were to be expected. While these costs might be a problem in that it hindered good relations between U.S. personnel and the purchaser, this does not mean that anything can be done about it. One sentiment was that it might cost more to award and administer a contract for a small order of an item no longer in the active U.S. inventory, and that this drove up unit costs.

The authors can only recommend research into the process by which purchaser nations make the U.S. aware of requirements. If the U.S. knew far enough in advance that several countries wanted orders of the same non-standard item (and the countries presented the U.S. with the appropriate Letters of Request), then procurement of such a larger quantity might be more economical. However, the increased administrative costs associated with several smaller orders coming in at different times would seem to be a condition to be accepted, rather than a problem to be solved.

5. Question 15: When FMS customer countries specify new and unused munition items it increased total costs. All but one of the individual categories of respondents ranked this question in the top seven on their list. It was ranked the highest by HQ AFSC, ALCs, and the ILC. Unified Commands ranked it the lowest of any category.

A sentiment which appeared several times in the comments was that this situation was to be expected. Another respondent noted that it would be more of a problem to the purchaser, who would bear the costs, than to the U.S. The authors surmise that this situation relates to a point made earlier. Increased costs would lead to purchaser dissatisfaction and have an adverse effect on U.S. personnel-host nation personnel working relationships. It would be seen as a problem, even though it might be unsolvable.

The authors recommend research into the area of purchaser awareness of the implications of requesting new and unused items. Some munitions items with a shelf-life might be available from U.S. stocks, but only with a portion of the shelf-life expired. A purchaser requirement for new and unused would eliminate the U.S. option of filling an order of such items from stock. It would force new, more costly, procurement. A related research effort could be into the question of whether, when new and unused requirements are not specified, items with the least remaining shelf-life are shipped from U.S. inventory. Such a practice would certainly lead to purchaser dissatisfaction.

6. Question 21: Defective munitions items including incomplete assemblies and unserviceable units are received by the purchasing country. HQ AFLC and Unified Commands ranked this problem as most important. For Hq AFLC it was tied for first with question 23 (see Appendix I).

Regarding the matter of incomplete deliveries, one sentiment expressed in comments was that purchasers were not always aware of complete round requirements. This could result in a purchaser not ordering all the components for the munitions desired. The resulting shipment might be complete, as ordered, but the purchaser would likely be upset that complete rounds could not be assembled from it.

Several comments pointed to possible lax quality control and quality assurance procedures for shipments from U.S. stock as a possible cause of unserviceable shipments. Other comments, though, cited the large amount of munitions shipped annually, and concluded that a certain amount of problems were a fact of life to be expected. The authors observe that a history of unserviceable shipments from U.S. stocks might prompt a purchaser to specify new and unused items.

The authors suggest research into two areas. The first is purchaser awareness, or lack thereof, or requirements for complete rounds of munitions items. The second is the matter of the adequacy of quality control and assurance procedures for items shipped from U.S. stock.

7. Question 1: A lack of sufficient lead time for processing after a letter of request for munitions items is received is a problem. All categories of agencies except Unified Commands and ODCs ranked this problem in their top

ten. It is interesting to note that the Unified Commands ranked it last on their list. This may have occurred because of many "Not Applicable" responses to this question by Unified Commands' respondents. Given the research design, such responses result in a problem being driven to the bottom of the list.

The Single Manager concept appeared several times in comments to this question. The sentiment seemed to be that it could add another, time-consuming, level of bureaucracy in cases involving items controlled by the Single Manager. Another sentiment, this one from personnel in agencies involved in the preparation of Price and Availability or Planning and Review information, described the frequent imposition by higher level offices of what were seen as unreasonably short suspenses. Related to this were thoughts that time was consumed because of the sheer numbers of such agencies and offices which were part of the coordination process.

The authors believe that such things as short suspenses and involved coordination processes are facts of life in an environment such as that for FMS. One such suggestion for research, though, might be the streamlining of the case flow between HQ AFLC, the appropriate ALC and the Single Manager in cases where the Single Manager is involved.

The Least Important Questions

In addition to being interested in which questions ranked the highest, some readers may be curious about the questions which appeared at the bottom of the ranking of problems, as seen by all respondents. Those questions which ranked in the last five positions are offered here in the order of importance:

1. Question 10: Foreign government insistence on a high ranking U.S. officer at all country reviews involving munition sales is a problem.
2. Question 19: All parties involved in processing munitions sales cases are aware the munitions items are being shipped to a foreign government.
3. Question 18: Quality Assurance (QA) charges are recouped in munition sale cases.
4. Question 22: Total transportation cost of munitions shipped by air from the U.S. are recovered.
5. Question 13: The future costs of shipping replacement items overseas for replacement of munitions sold from overseas depots are charged to the purchasing nation.

A review of Table 2, page 54, shows that a great diversity in opinion exists among the eight categories on the importance of each of these questions. Each question was ranked as high as 14th at least once; and as low as 27th

at least once. This suggests that these questions may represent problems which impact fewer agencies in the Air Force in the management of FMS munitions cases.

The most common element in the five lowest-ranking questions is that of cost recovery. That this topic is rated so low (in the last three places) suggests at least two inferences. The first would be that it has been ranked low because respondents do not see problems in the area. A second inference would be that respondents are not overly concerned if problems exist in the area, as they do not see it as their area of responsibility. The authors believe that this matter should be further investigated.

Summary

This chapter has presented the results of the research efforts undertaken by the authors. The reader has been exposed to the perceptions of a sample of Air Force managers in the FMS arena. The authors have discussed each of the most important, and some of the least important, questions in light of areas which they suggest for further research. In the middle portion of the rankings, the level of agreement was so low that no firm conclusions could be drawn.

What follows in the last chapter will be a concise restatement of the authors' suggestions for further

investigation in this area, and a summation of the purpose
and accomplishments of this entire research effort.

CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Overview

This final chapter begins with a summary of the impetus behind this research and the methodology employed. Next, the conclusions are discussed by an examination of the research objectives in question. The final section of the chapter provides suggestions for further study, and reinforces the accomplishment of the research objectives.

Summary

Impetus for Study

The goal of this thesis was to add to the body of knowledge related to FMS munitions problems by surveying the Air Force FMS community. Munition sales make up a considerable percentage of the overall FMS program. Also, Air Force Major Commands and Operating Agencies involved with FMS are responsible for negotiating, implementing, and managing FMS munition cases. The tremendous increase in FMS by the United States over the past several years has led to a great deal of attention being focused on this activity. However, a review by the authors revealed

that there has been very little written on the subject of FMS of munitions; and, more specifically, there existed no compilation of specific problems facing the managers of the program.

Research Design

This research was conducted in two phases. The initial stage consisted of a documentary search and review which laid the essential foundation for the study. In addition, numerous conversations were conducted with managers throughout the FMS arena to discover possible problem areas for inclusion within the survey. The second stage consisted of preparing, distributing, and analyzing the results of the survey. The empirical data collected via the survey was evaluated and synthesized with the documentary evidence initially collected to form this study's analysis, conclusions, and recommendations.

Conclusions

The research objectives of this effort were as stated in Chapter I. These objectives were attained by answering the following research questions.

Research Question #1

What is the basic structure and process through which the Air Force accomplishes munitions-related FMS cases?

As developed in Chapter II, one must possess a grasp of the DOD munition structure, especially the Single Manager for Conventional Ammunition, in addition to the Department of the Air Force structure involved with munitions. The chapter also presented the flow of USAF munitions cases from the Letter of Request on through to case closure. This coverage provides an adequate response to this question.

Research Question #2

What are the problems facing the Air Force in the management of munitions-related cases?

This question was answered by the development of the survey covered in Chapter III and also by the additional problem areas provided by the respondents of the survey. These additional problem areas are contained in Appendix G following question number 29.

Research Question #3

Which problems in the management of Air Force FMS of munitions are considered the most serious?

As detailed in Chapter IV, the twenty-nine questions are ordered by Kendall Test ranksum. The procedure indicates the perceived importance of the problems by the respondents. In addition, the top-seven ranked questions were discussed in some detail. This information was responsive to this question.

Research Question #4

What are some problem areas requiring further research?

This question is addressed in the recommendations contained within this chapter.

Recommendations for Research

This section presents a summary of the authors' recommendations which were discussed after each question in the last section of Chapter IV. Also presented are several topics which were noted in the respondents' suggestions for investigation into problems not addressed in the survey. Where several questions prompted recommendations into the same general problem area, those recommendations have been consolidated here. The authors conclude from analysis of the survey results that the following problem areas offer promise for research:

1. Differences in U.S. versus foreign nation procurement methods as a source of misunderstanding in the FMS process.
2. Breakdowns in the information flow between the U.S. and foreign nations: specifically, the areas of notification of the U.S. by foreign nations of their munitions requirements; notification of the foreign nation by the U.S. of lead time information; implications of new and unused procurements; and complete-round data.

3. Procedures for estimating lead times in munitions procurements and shipments.

4. The flow of FMS case documentation as it pertains to the Single Manager for Conventional Ammunition and that office's interface with the Air Logistics Centers.

5. Poor quality control in shipment of items from U.S. stocks, and the shipment of items with little remaining shelf life.

6. FMS manager attitudes regarding the importance of cost recovery measures.

Shown below are several areas not covered by the survey into which the respondents recommend research.

The authors concur that these areas are worthy of attention:

1. The Single Manager for Conventional Ammunition in negotiation and management of cases in which that office has control of the munitions items involved.

2. Impact of U.S. explosive-manufacturing plant closures on U.S. munitions procurement.

3. The adequacy of documentation in such areas as service and shelf life of munitions possessed by foreign nations.

4. The age and cost of munitions sold by the U.S. versus that of similar items available from other nations.

Epilogue

In closing, the reader is reminded that munitions play a major role in the Air Force FMS arena. While it is true that the Air Force is confined to implementation of an FMS case, it can nevertheless exert control over a significant number of problems revealed by this research. It is important that this should be done, particularly since our nation's leaders are continuing to use FMS as an important instrument of foreign policy. Thus, it is the authors' hope that this research will contribute to more effective management of this valuable foreign policy tool.

APPENDICES

APPENDIX A

MUNITIONS LISTED IN AF REGULATION 400-3,
DATED 18 MAY 1978

A three digit alpha-numeric code, assigned in the Military Articles and Services List (MASL), represents the type of materiel or services according to budget activity/project account classification. The first digit of the generic code is alphabetic and identifies one of the following Budget Activities:

- A. Aircraft
- B. Missiles
- C. Ships
- D. Combat Vehicles
- E. Tactical and Support Vehicles
- F. Weapons
- G. Ammunition
- H. Communications Equipment
- J. Other Support Equipment
- K. Supplies
- L. Supply Operations
- M. Maintenance of Equipment
- N. Training
- P. Research and Development
- Q. Construction
- R. Special Activities
- T. Administration

The second digit is numeric and represents the budget project. The third digit is alphabetic and is assigned each generic grouping of articles and services with similar characteristics:

EXAMPLE--(B2R Sidewinder): First digit--B--Budget Activity (Missile); First and second digits--B2--Budget Project (Air Launched Missiles and Support Equipment); First, second and third digits--B2R--Generic Code (Sidewinder).

A complete listing of munitions-related (as defined in Chapter I of this research effort) Generic Codes follows:

B. MISSILES:

1. Ground Launched Missiles and Support Equipment:

- A. Nike.
- B. Redeye.
- C. Hawk.

- D. Mauler.
- E. Jupiter.
- F. Sergeant.
- G. Pershing.
- H. Entac.
- J. Tow.
- K. Dragon.
- L. Lacrosse.
- M. Thor.
- N. Lance.
- R. Chapperal.
- S. Shillelagh.

2. Air Launched Missiles and Support Equipment:

- A. Shrike AGM-45-3A.
- D. Standard.
- F. Aerial Target Missile.
- G. Maverick.
- N. Falcon.
- R. Sidewinder.
- S. Bullpup.
- T. Phoenix.
- V. Corporal.
- W. Sparrow.
- Y. Matador.
- Z. Multipurpose Missile Equipment.

G. AMMUNITION:

1. Ammunition up to 75mm and Grenades:

- A. 22 caliber.
- B. 30 caliber.
- C. 7.62mm.
- D. 38 caliber.
- E. 45 caliber.
- F. 50 caliber.
- G. 60 caliber.
- H. 20mm.
- J. 37mm.
- K. 40mm.
- L. 57mm.
- M. 60mm Mortar.
- N. Shotguns.
- P. Grenades.
- Z. Other ammunition, up to 75mm.

2. Ammunition, 75mm and over:

- A. 75mm.
- B. 76mm.
- C. 81mm Mortar.
- D. 90mm.
- E. 105mm.
- F. 106mm.
- G. 4.2-inch Mortar.
- H. 3-inch/50.
- J. 5-inch/25.
- K. 5-inch/38.
- L. 5-inch/54.
- M. 155mm.
- N. 175mm.
- P. 8 inch.
- Z. Other ammunition, 75mm and over.

3. Land Mines and Explosives:

- A. Antipersonnel Mines.
- B. Antitank mines.
- C. Demolition Kits.
- D. Charges.
- Z. Other Explosives and Land Mine Components.

5. Bombs and Rockets:

- A. Practice Bombs and Shapes.
- B. Armor Piercing Bombs.
- C. Depth Bombs.
- D. Fire and Incendiary Bombs.
- E. Fragmentation Bombs.
- F. General Purpose Bombs.
- G. Electronic Operated Guided Bombs.
- M. Bomb Components.
- N. Other Bombs.
- P. 2.25-inch Rockets.
- Q. 2.36-inch Rockets.
- R. 2.75-inch Rockets.
- S. 3.5-inch Rockets.
- T. 5-inch Rockets.
- U. 7.2-inch Rockets.
- Y. Rockets Components.
- Z. Other Rockets.
- W. Honest John Rockets and Support Equipment.

6. Pyrotechnic and Chemical Munitions:

- A. Chemical Munitions.
- B. Pyrotechnics.

7. Other Ammunition:

- A. Ammunition Raw Materials.
- B. Fuses and Primers.
- C. Ammunition Containers.
- D. Miscellaneous Ammunition, Tools
and Specialized Equipment.

APPENDIX B
SMCA MUNITIONS ASSIGNMENTS

TABLE 5
CONVENTIONAL AMMUNITION ITEMS INCLUDED IN THE
SINGLE MANAGER PHASE I CHARTER (2:41)

<u>Federal supply classes</u>	<u>Item</u>	<u>Army</u>	<u>Navy</u>	<u>Air Force</u>	<u>Marine Corps</u>	<u>Common to two or more</u>	<u>Total</u>
1305	Ammunition to 30-mm.	379	442	288	152	174	1,435
1310	Ammunition over 30-mm. to 75-mm.	139	85	25	64	25	338
1315	Ammunition over 75-mm. to 125-mm.	590	324	35	375	51	1,375
1320	Ammunition over 125-mm.	244	656	-	87	7	994
1325	Bombs	204	335	475	0	103	1,117
1330	Grenades	105	99	39	98	69	410
1340	Rockets, rocket ammunition, and rocket components	96	210	63	61	30	460
1345	Land mines	129	28	33	58	24	272
1365	Military chemical agents	43	36	15	20	9	123
1370	Pyrotechnics	74	224	159	102	73	632
1375	Demolition materials	247	136	72	97	72	624
1376	Bulk explosives	234	16	1	5	1	257
1390	Fuzes and primers	232	220	3	122	15	592
1395	Miscellaneous ammunition (includes shapes, such as blanks, discs, slugs, and cups)	50	93	1	15	-	159
8140	Ammunition and nuclear ordnance boxes, packages, and special containers	863	20	13	85	8	989
Total		<u>3,629</u>	<u>2,924</u>	<u>1,222</u>	<u>1,341</u>	<u>661</u>	<u>9,777</u>

oo

TABLE 6

AMMUNITION ITEMS NOT SUBJECT TO SINGLE
MANAGER ASSIGNMENT (2:42)

<u>Federal supply classes</u>	<u>Item</u>	<u>Army</u>		<u>Navy</u>		<u>Air Force</u>		<u>Marine Corps</u>	
		<u>Single user</u>	<u>Multi-user</u>	<u>Single user</u>	<u>Multi-user</u>	<u>Single user</u>	<u>Multi-user</u>	<u>Single user</u>	<u>Multi-user</u>
1336	Guided missiles	121	21	245	43	219	42	10	20
1337	Guided missiles	49	3	86	34	146	34	-	3
1338	Guided missiles	55	8	23	30	522	30	2	8
1350	Underwater mines	1	1	2,056	4	1	2	-	1
1351	Underwater mines	-	-	395	3	-	3	-	-
1355	Torpedo inert	-	-	4,919	-	-	-	-	-
1356	Torpedo explosive	-	-	161	-	-	-	-	-
1360	Depth charge	-	1	259	1	-	-	-	-
1361	Depth charge	-	-	45	-	-	-	-	-
1377	Cartridge actuated device/propellant actuated device	105	105	791	186	1,453	224	11	11
1385	Explosive ordnance disposal tools	10	100	79	148	2	95	39	144
1386	Explosive ordnance disposal tools	-	5	239	30	-	9	1	23
	Total	<u>341</u>	<u>244</u>	<u>9,298</u>	<u>479</u>	<u>2,343</u>	<u>439</u>	<u>63</u>	<u>210</u>

APPENDIX C
RESEARCH SURVEY



DEFENSE INSTITUTE OF SECURITY ASSISTANCE MANAGEMENT
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433

REPLY TO
ATTN OF: DR

3 0 JAN 1980

SUBJECT: Foreign Military Sales (FMS) of Munitions Survey

TO: Commander, Director or Supervisor

1. The enclosed survey(s) are a significant segment of research directed at determining the problems encountered in the management of Foreign Military Sales cases involving actual munition items. We request you forward the survey(s) to the individual(s) within your organization possessing the most expertise in this area.
2. Your cooperation is greatly appreciated.

ROBERT E. TRAPP
Director of Research
and Consultation

1 Atch
Survey(s)



DEFENSE INSTITUTE OF SECURITY ASSISTANCE MANAGEMENT
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433

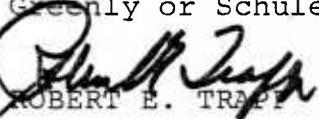
REPLY TO
ATTN OF: DR

30 JAN 1980

SUBJECT: Foreign Military Sales (FMS) of Munitions Survey

TO:

1. The attached questionnaire was prepared by a research team at the Air Force Institute of Technology, Wright-Patterson AFB, Ohio. This research effort is being sponsored by the Defense Institute of Security Assistance Management. The purpose of the questionnaire is to measure the attitudes of various organizations involved in FMS of munitions toward possible problem areas. Although the questionnaire is limited to the U. S. Air Force FMS munitions case environment, analysis of the survey responses may lead to a better understanding of possible problem areas by the entire Department of Defense FMS community.
2. You are requested to provide an answer or comment for each question. This questionnaire has been approved by Headquarters USAF and Survey Control Number 80-44 has been assigned. Your participation in this research is voluntary.
3. Your response to the questions will be held in confidence. Please remove this cover sheet before returning the completed questionnaire. Your cooperation in providing this data will be appreciated and will be very beneficial in documenting possible problem areas in the FMS of munitions. Your comments are especially encouraged. Please mail the completed questionnaire in the pre-addressed envelope.
4. If you have any questions, please contact Captains Greenly or Schuler, AFIT/LSG, AUTOVON 785-5023.


ROBERT E. TRAPF
Director of Research
and Consultation

- 2 Atch.
1. Questionnaire
2. Return Envelope

PRIVACY STATEMENT

In accordance with paragraph 30, AFR 12-35, the following information is provided as required by the Privacy Act of 1974:

a. Authority

- (1) 5 U.S.C. 301, Departmental Regulations, and/or
- (2) 10 U.S.C. 8012, Secretary of the Air Force, Powers, Duties, Delegation by Compensation; and/or
- (3) DOD Instruction 1100.13, 17 Apr 68, Surveys of Department of Defense Personnel; and/or
- (4) AFR 30-23, 22 Sep 76, Air Force Personnel Survey Program.

b. Principal Purposes. The survey is being conducted to collect information to be used in research aimed at illuminating and providing inputs to the solution of problems of interest to the Air Force and/or DOD.

c. Routine Uses. The survey data will be converted to information for use in research of management related problems. Results of the research, based on the data provided, will be included in written master's theses and may also be included in published articles, reports, or texts. Distribution of the results of the research, based on the survey data, whether in written form or presented orally, will be unlimited.

d. Participation in this survey is entirely voluntary.

e. No adverse action of any kind may be taken against any individual who elects not to participate in any or all of this survey.

PURPOSE OF THIS STUDY

This questionnaire is an important part of a research study of possible problems in the sale of munitions through Foreign Military Sales (FMS) procedures. The purpose of the research is to measure the attitudes of individuals with the goal of improving the Air Force's understanding of possible problem areas in the sale of munitions.

INSTRUCTIONS

1. Please answer all questions honestly and candidly. No attempt will be made to trace responses to an individual. There are no "trick" questions. We simply want to know how you and other individuals working in this field, feel about possible problem areas.
2. Please answer all questions in the space provided in the questionnaire. Read each question and all responses carefully before selecting your answer.
3. For this survey the term munitions also includes tactical missiles.
4. Your comments can aid greatly in determining other possible problem areas.

PLEASE NOTE: This information will be used for research purposes only. The only presentation of this data to anybody will be in terms of overall group responses.

DEMOGRAPHIC DATA

Please indicate your response to the following questions with a check mark (/) in the appropriate blank.

1. How long have you worked with the Security Assistance Program? (In years)

_____ 5 or more _____ 4 _____ 3 _____ 2 _____ 1 or less

2. Military or civilian: What is your rank/grade?

_____ Col/GS-15 _____ LC/GS-14 _____ Maj/GS-13 _____ Capt/GS-12 _____ LT/GS-11
or lower

3. How frequently do you work with FMS munition cases?

_____ weekly _____ monthly _____ quarterly _____ annually _____ never

4. To which agency are you assigned?

_____ Hq USAF
_____ Unified Command
_____ Hq AFLC
_____ Hq AFSC
_____ ALC
_____ ILC
_____ MAAG/MISSION (Having 7 or more U.S. military personnel.)
_____ ODC, etc. (Having 6 or fewer U.S. Military personnel.)
_____ Other (Specify: _____)

5. Do you feel that problem areas exist in the FMS cases involving munitions?

_____ Yes _____ No _____ Don't Know

Please express your agreement or disagreement that the following statements represent possible problem areas within FMS munition cases. Each statement requires two responses. On the first line of possible responses indicate your perception of the statement as it relates to the total Air Force FMS munition environment. On the second line of possible responses indicate your perception of the statement as it relates to your organization. Record your responses on a range of:

Strongly Disagree	Moderately Disagree	Neutral or Undecided	Moderately Agree	Strongly Agree	Not Applicable
SD	MD	N/U	MA	SA	N/A

PLEASE NOTE

Space has been provided after every question for specific comments concerning that question. We feel your comments can add greatly to the results of this survey.

POTENTIAL PROBLEM AREAS

1. A lack of sufficient lead time for processing after a letter of request for munition items is received is a problem.

For Air Force FMS	SD	MD	N/U	MA	SA	N/A
For Your Organization	SD	MD	N/U	MA	SA	N/A

Your comment:

Strongly Disagree SD	Moderately Disagree MA	Neutral or Undecided N/U	Moderately Agree MA	Strongly Agree SA	Not Applicable N/A
----------------------------	------------------------------	-----------------------------------	---------------------------	-------------------------	--------------------------

2. The lack of a munition expert within each agency processing FMS munition sales cases is a problem.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

3. The fact that only defined (firm) order cases can be used for FMS munition cases is a problem.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

Strongly Disagree	Moderately Disagree	Neutral or Undecided	Moderately Agree	Strongly Agree	Not Applicable
SD	MD	N/U	MA	SA	N/A

4. The training level of the purchasing nation's personnel is sufficient to implement munition sale cases effectively.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

5. Purchasing nation's personnel understand the U. S. directives governing munition sales.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

Strongly Disagree	Moderately Disagree	Neutral or Undecided	Moderately Agree	Strongly Agree	Not Applicable
SD	MD	N/U	MA	SA	N/A

6. Purchasing nation's personnel follow U. S. directives governing munition sales.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

7. The lack of long range planning (3 to 5 years) for FMS of munition cases is a problem.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

Strongly Disagree SD	Moderately Disagree MD	Neutral or Undecided N/U	Moderately Agree MA	Strongly Agree SA	Not Applicable N/A
-------------------------	---------------------------	-----------------------------	------------------------	----------------------	-----------------------

8. U. S. Government costs are fully recovered from the foreign government in FMS of munition cases.

For Air Force FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For Your Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

9. The system of providing changes to munition technical orders (TOs) is adequate.

For Air Force FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For Your Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

Strongly Disagree SD	Moderately Disagree MD	Neutral or Undecided N/U	Moderately Agree MA	Strongly Agree SA	Not Applicable N/A
-------------------------	---------------------------	-----------------------------	------------------------	----------------------	-----------------------

10. Foreign government insistence on a high ranking U. S. officer at all country reviews involving munition sales is a problem.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

11. Initial munition TOs are provided in the time frame required by the foreign government.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

Strongly Disagree	Moderately Disagree	Neutral or Undecided	Moderately Agree	Strongly Agree	Not Applicable
SD	MD	N/U	MA	SA	N/A

12. Surcharge rates charged to purchasing nations recover total cost for packing, crating, and handling of munition items.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

13. The future costs of shipping replacement items overseas for replacement of munitions sold from overseas depots are charged to the purchasing nation.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

Strongly Disagree SD	Moderately Disagree MD	Neutral or Undecided N/U	Moderately Agree MA	Strongly Agree SA	Not Applicable N/A
-------------------------	---------------------------	-----------------------------	------------------------	----------------------	-----------------------

14. Present proof of delivery procedures are adequate.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

15. When FMS customer countries specify new and unused munition items it increases total costs.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

Strongly Disagree SD	Moderately Disagree MD	Neutral or Undecided N/U	Moderately Agree MA	Strongly Agree SA	Not Applicable N/A
-------------------------	---------------------------	-----------------------------	------------------------	----------------------	-----------------------

16. Munition logistics follow-on support programs for foreign military sales are adequate.

For Air Force FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For Your Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

17. Time delays result by the prime munitions contractor not being present for program reviews.

For Air Force FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For Your Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

Strongly Disagree SD	Moderately Disagree MD	Neutral or Undecided N/U	Moderately Agree MA	Strongly Agree SA	Not Applicable N/A
-------------------------	---------------------------	-----------------------------	------------------------	----------------------	-----------------------

18. Quality Assurance (QA) charges are recouped in munition sale cases.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

19. All parties involved in processing munition sale cases are aware the munition items are being shipped to a foreign government.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

Strongly Disagree SD	Moderately Disagree MD	Neutral or Undecided N/U	Moderately Agree MA	Strongly Agree SA	Not Applicable N/A
-------------------------	---------------------------	-----------------------------	------------------------	----------------------	-----------------------

20. The difference in the way the U. S. conducts its munition procurements versus the procurement methods used by the purchasing country can result in misunderstandings.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

21. Defective munition items including incomplete assemblies and unserviceable units are received by the purchasing country.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

Strongly Disagree	Moderately Disagree	Neutral or Undecided	Moderately Agree	Strongly Agree	Not Applicable
SD	MD	N/U	MA	SA	N/A

22. Total transportation cost of munitions shipped by air from the U. S. are recovered.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

23. Munition sales of U. S. non-standard (not in U. S. inventory) versus standard (in U. S. inventory) munition items result in increased administrative cost.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

Strongly Disagree SD	Moderately Disagree MD	Neutral or Undecided N/U	Moderately Agree MA	Strongly Agree SA	Not Applicable N/A
-------------------------	---------------------------	-----------------------------	------------------------	----------------------	-----------------------

24. Negotiation by the foreign government of an offset agreement to produce components as a condition of a munition sale is increasing.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

25. The present procedures for establishing responsibility for loss and damage claims are adequate.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

Strongly Disagree	Moderately Disagree	Neutral or Undecided	Moderately Agree	Strongly Agree	Not Applicable
SD	MD	N/U	MA	SA	N/A

26. Standard surcharges for recovering port handling costs recover all costs.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

27. Actual lead time for procurement and production of many munition items exceeds the estimated lead time (reflected in block 18, "Availability and Remarks" of the DD Form 1513) for delivery under FMS munition cases.

For
Air Force
FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For
Your
Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

Strongly Disagree SD	Moderately Disagree MD	Neutral or Undecided N/U	Moderately Agree MA	Strongly Agree SA	Not Applicable N/A
-------------------------	---------------------------	-----------------------------	------------------------	----------------------	-----------------------

28. The current computerized supply system provides for efficient processing of a FMS munition case.

For Air Force FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For Your Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

29. The purchasing nations are not presently paying for all cost incurred by the U. S. in FMS munition sale cases.

For Air Force FMS

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

For Your Organization

SD	MD	N/U	MA	SA	N/A
----	----	-----	----	----	-----

Your comment:

If you are aware of any problem areas you would like to include within this survey please write them in the space provided below.

Please insert the completed questionnaire in the pre-addressed envelope and place the envelope in outgoing official distribution. Thank you for completing this survey.

APPENDIX D
SURVEY SAMPLE ADDRESS LIST

MAAGs/Missions and ODCs

<u>Address</u>	<u>Number of Surveys Mailed</u>
ZAMISH (Zaire), APO New York 09662	1
JUSMMAT (Turkey), ATTN: Air Force Section, APO New York 09254	2
USDAO (Great Britain), Box 36, FPO New York 09510	2
USODC (Montevideo), APO Miami 34035	1
USMILGP (Caracas), APO Miami 34037	1
OMC (Sana), c/o American Embassy, State Department Pouch Room, Washington DC 20520	1
USDAO (Belgrade), State Department Pouch Room, Washington DC 20520	1
USDAO (Stockholm), State Department Pouch Room, Washington DC 20520	1
USDAO (Bern), State Department Pouch Room, Washington DC 20520	1
COMUSMACTHAI (Thailand), ATTN: MAGTAF, APO San Francisco 96346	2
CHUSLOT (Tunisia), State Department Pouch Room, Washington DC 20520	1
USDAO (Dakar), State Department Pouch Room, Washington DC 20520	1
USDAO (Singapore), FPO San Francisco 96699	1
JUSMG-MAAG (Spain), ATTN: Air Force Section, APO New York 09285	2
USDAO (Colombo), State Department Pouch Room, Washington DC 20520	2

USOMC (Khartoum), State Department Pouch Room, Washington DC 20520	1
Commanding General, S.A.N.G. Modernization Program (Riyadh), APO New York 09038	1
USMTM (Dhahran), ATTN: Navy Section, APO New York 09616	1
USMTM (Dhahran), ATTN: Air Force Section, APO New York 09616	2
USDAO (Kathmandu), State Department Pouch Room, Washington DC 20520	1
USODC (Hague), APO New York 09159	2
USDAO (Wellington), State Department Pouch Room, Washington DC 20520	2
USDAO (Lagos), State Department Pouch Room, Washington DC 20520	1
JUSMAG (Korea), ATTN: MKAR (Army), APO San Francisco 96302	1
MUSLO (Morocco), State Department Pouch Room, Washington DC 20520	1
USDAO (Mexico City), State Department Pouch Room, Washington DC 20520	1
USDAO (Bamako), State Department Pouch Room, Washington DC 20520	1
USDAO (Kuala Lumpur), State Department Pouch Room, Washington DC 20520	2
JUGMAG (Manila), APO San Francisco 96528	2
MAAG (Lima), APO Miami 34031	1
USODC (Asuncion), APO Miami 34036	1
USMILGP (Panama City), c/o U.S. Embassy, Box 2016, Balboa Canal Zone	2
ODRP (Islamabad), State Department Pouch Room, Washington DC 20520	1

USDAO (Muscat), State Department Pouch Room, Washington DC 20520	1
USODC (Oslo), APO New York 09085	1
AFELM (Taif, Saudi Arabia), APO New York 09017	1
MAAG (Lisbon), APO New York 09678	1
JUSMAG (Manila), ATTN: JPAF (Air Force), APO San Francisco 96528	1
USMTM (Saudi Arabia), ATTN: Army Section, APO New York 09131	1
JUSMAG (Korea), ATTN: MKAF (Air Force), APO San Francisco 96302	2
JUSMAG (Korea), ATTN: MKNA (Navy), APO San Francisco 96302	1
USLOK (Kuwait), State Department Pouch Room, Washington DC 20520	1
USDAU (Beirut), State Department Pouch Room, Washington DC 20520	1
LIBMISH (Liberia), APO New York 09155	1
USDAO (Tokyo), APO San Francisco 96503	2
MAP (AMMAN), ATTN: Air Force Station, APO New York 09892	1
KUSLO (Nairobi), State Department Pouch Room, Washington DC 20520	1
USDLG (Indonesia), ATTN: Plans, Programs, and Training, APO San Francisco 96356	1
USDAO (Dublin), State Department Pouch Room, Washington DC 20520	1
USDAO (Tel Aviv), APO New York 09672	1
USODC (Rome), APO New York 09794	1
USDAO (Abidjan), State Department Pouch Room, Washington DC 20520	1

USDAO (Kingston), State Department Pouch Room, Washington DC 20520	1
USMILGP (Tequigalpa), APO Miami 34022	1
ODRI (New Delhi), State Department Pouch Room, Washington DC 20520	1
USDLG (Indonesia), ATTN: Air Force Division, APO San Francisco 96356	2
USODC (Bonn), Box 810, APO New York 09080	2
USDAO (Accra), State Department Pouch Room, Washington DC 20520	1
JUSMAG (Athens), ATTN: Air Force Section, APO New York 09223	2
USMILGP (Guatemala City), APO Miami 34024	1
USDAO (Port-au-Prince), State Department Pouch Room, Washington DC 20520	1
USMILGP (Bogota), APO Miami 34038	1
USODC (San Jose), APO Miami 34020	1
USODC (Copenhagen), APO New York 09170	1
MAAG (Santo Domingo), APO Miami 34041	1
USMLO (Quito), APO Miami 34039	1
USDAO (Cairo), State Department Pouch Room, Washington DC 20520	2
USMILGP (San Salvador), APO Miami 34023	1
USDAO (Helsinki), APO New York 09664	1
USODC (Paris), APO New York 09777	1
USMILGP (La Paz), APO Miami 34032	1
JBUSMC (Rio de Janeiro), ATTN: Air Force Section, APO Miami 34030	2
USDAO (Rangoon), State Department Pouch Room, Washington DC 20520	1

U.S. EMBASSY (Cameroon), ATTN: DCM, State Department Pouch Room, Washington DC 20520	1
USDAO (Ottawa), P.O. Box 1514, Ontario, Canada K1P 5R5	1
USDAO (N'Djamena), State Department Pouch Room, Washington DC 20520	1
USMILGP (Santiago), APO Miami 34033	1
USDAO (Kabul), State Department Pouch Room, Washington DC 20520	1
USMILGP (Buenos Aires), APO Miami 34034	1
USDAO (Canberra), APO San Francisco 96404	1
USDAO (Vienna), State Department Pouch Room, Washington DC 20520	1
USODC (Bellux), APO New York 09667	1

Unified Commands

PACIFIC AIR FORCES, ATTN: PACAF/XPK/LGXI, Director of Security Assistance Affairs, Hickam AFB, HI 96853	4
USCINCEUR, ATTN: EUCOM J4/7, APO New York 09128	4
Commander in Chief, U.S. Southern Command, ATTN: SCSA, APO Miami 34003	2
USAFSO/LAL, Howard AFB, Canal Zone, APO Miami 34001	3
EUCOM, AFLC Liaison Officer, ATTN: ECJ4/7 (AFLC/LO), APO New York 09128	2
CINCPAC, ATTN: PACOM J4, Camp Smith HI 96861	2

Stateside Agencies

AFSC/SDI, INTERNATIONAL PROGRAM OFFICE, Andrews AFB, MD 20334	5
ELECTRONIC SYSTEMS DIVISION, ATTN: ESD/FA, Director of Security Assistance, Hanscom AFB MA 01731	1
AFLC/LOZP, WPAFB OH 45433	2
ASD/SK-65, WPAFB OH 45433	2
ASD/YX, WPAFB OH 45433	2
ASD/YP, WPAFB OH 45433	2
ASD/YF, WPAFB OH 45433	2
AD/XR, ARMAMENTS and NATO RSI, Eglin AFB FL	1
HQ U.S. Air Force, ATTN: PAI, Director, Military Assistance and Sales, Washington DC 20330	4
Warner-Robins ALC, Directorate of Material Mgmt, Robins AFB GA 31098	10
Oklahoma City ALC, Directorate of Material Mgmt, Tinker AFB OK 73145	2
San Antonio, ALC, ATTN: MI, Director for International Logistics, Kelly AFB TX 78241	2
Sacramento ALC, Directorate of Material Mgmt, McClellan AFB CA 95652	2
Ogden ALC, Director of Material Mgmt, Hill AFB UT 84406	10
HQ Tactical Air Command, ATTN: TAC/DOO, Langley AFB VA 23665	1
HQ Military Airlift Command, Scott AFB IL 62225	2
HQ U.S. Air Force, ATTN: AFCVA, Foreign Liaison Division, Washington DC 20330	2
AFLC/MI, Assistant for International Logistics, WPAFB OH 45433	5

ILC/XRC, WPAFB OH 45433	3
ILC/XR, WPAFB OH 45433	3
ILC/DOA, WPAFB OH 45433	4
AFLC/LOWM, WPAFB OH 45433	3
HQ U.S. Air Force, ATTN: LEYW, Washington DC 20330	4

APPENDIX E
COMPUTER PROGRAM

The FORTRAN coding presented in this appendix is a listing of the program used to analyze each of the data files shown in Appendix F. Small changes were made as necessary to account for the number of respondents in each case. In the case of the first file, all sixty-two respondents were treated as one group. In the second file, the respondents were treated as eight categories ranging in size from five to fourteen. The labels and array-dimension statements were changed to reflect this. The third file, that of respondents who handled cases weekly, was similar to the first in that it was analyzed as a single group.

```
0010C ****
0020C PROGRAM THSANALB -"THESIS ANALYSIS SCALE B"
0030C GREENLY/SCHULER THESIS LSSR 38-80
0040C ****
0050 DIMENSION ANSR(14,30,8),N(8),RS(29),T(6)
0060 DIMENSION AVR(6),TC(6),IK(14,30,8)
0070 REAL KENG,KENU,MRS
0080 CALL ATTACH(11,"TSDATAB; ",1,0,,)
0090C ****
0100C N(1) TO N(8) REPRESENTS NUMBER OF RESPONDENTS
0110C IN CATEGORY 1 TO CATEGORY 8
0120C ****
0130 N(1)=5
0140 N(2)=6
0150 N(3)=5
0160 N(4)=7
0170 N(5)=9
0180 N(6)=6
0190 N(7)=11
0200 N(8)=14
0210C ****
0220C READ RESPONSES INTO ARRAY ANSR(J,K,I)
0230C I = NUMBER OF THE CATEGORY CURRENTLY
0240C BEING CONSIDERED
0250C J = NUMBER OF THE RESPONDENT WITHIN
0260C THAT CATEGORY
0270C K = NUMBER OF THE QUESTION ON THE SURVEY
0280C TO WHICH ANSWER LISTED APPLIES
0290C ****
0300 DO 20 I=1,8
0310 DO 10 J=1,N(I)
0320 READ (11,999)LN,(ANSR(J,K,I),K=1,15),LN,(ANSR(J,K,I),K=16,29)
0330 999 FORMAT(V)
0340 10 CONTINUE
0350 20 CONTINUE
0360 DO 15 L=1,8
0370 DO 15 M=1,N(L)
0380 DO 15 K=1,29
0390 IK(M,K,L)=0
0400 15 CONTINUE
0410 DO 380 I=1,8
0420 DO 190 J=1,N(I)
0430 DO 30 K=1,6
0440 TC(K)=0.
0450 T(K)=0.
0460 AVR(K)=0.
0470 30 CONTINUE
0480C
0490C
```

0500C
0510C
0520C *****
0530C COUNT NUMBER OF OCCURENCES OF EACH
0540C RATING VALUE (5,4,3,2,1,0) IN A
0550C RESPONDENT'S ANSWERS
0560C *****
0570 DO 120 L=1,29
0580 IF (ANSR(J,L,I)-2)40,80,50
0590 40 IF (ANSR(J,L,I)-1)60,70,70
0600 50 IF (ANSR(J,L,I)-4)90,100,110
0610 60 T(6)=T(6)+1.
0620 GO TO 120
0630 70 T(5)=T(5)+1.
0640 GO TO 120
0650 80 T(4)=T(4)+1.
0660 GO TO 120
0670 90 T(3)=T(3)+1.
0680 GO TO 120
0690 100 T(2)=T(2)+1.
0700 GO TO 120
0710 110 T(1)=T(1)+1.
0720 120 CONTINUE
0730C *****
0740C COMPUTE VALUE OF T FOR EACH RESPONDENT
0750C ENTER T IN COLUMN 30 OF THAT ROW
0760C *****
0770 DO 130 M=1,6
0780 TC(M)=T(M)**3-T(M)
0790 130 CONTINUE
0800 ANSR(J,30,I)=(TC(1)+TC(2)+TC(3)+TC(4)+
0810&TC(5)+TC(6))/12.
0820C *****
0830C COMPUTE AVERAGE RANK FOR ALL 5'S; FOR ALL 4'S;
0840C FOR ALL 3'S; ETC., IN A RESPONDENT'S ANSWERS
0850C *****
0860 RK=0.
0870 DO 150 M=1,6
0880 RKT=0.
0890 IF (T(M).EQ.0.)AVR(M)=0.
0900 IF(T(M).EQ.0.)GO TO 150
0910 DO 140 K=1,T(M)
0920 RK=RK+1.
0930 RKT=RKT+RK
0940 140 CONTINUE
0950 AVR(M)=RKT/T(M)
0960 150 CONTINUE
0970C
0980C

```

0990C
1000C
1010C ****
1020C TRANSFORM RATINGS TO RANKINGS
1030C ****
1040 RTG=6.
1050 DO 180 M=1,6
1060 RTG=RTG-1.
1070 DO 170 K=1,29
1080 IF(IK(J,K,I).EQ.1)GO TO 170
1090 IF(ANSR(J,K,I).NE.RTG)GO TO 170
1100 ANSR(J,K,I)=AVR(M)
1110 IK(J,K,I)=1
1120 170 CONTINUE
1130 180 CONTINUE
1140 190 CONTINUE
1150C ****
1160C COMPUTE RANKSUM FOR EACH ITEM (1 TO 29) IN
1170C CATEGORY BEING CONSIDERED
1180C ****
1190 DO 220 L=1,29
1200 RS(L)=0.
1210 DO 210 J=1,N(I)
1220 RS(L)=RS(L)+ANSR(J,L,I)
1230 210 CONTINUE
1240 220 CONTINUE
1250C ****
1260C COMPUTE MEAN RANKSUM FOR CATEGORY
1270C BEING CONSIDERED
1280C ****
1290 TRS=0.
1300 DO 230 L=1,29
1310 TRS=TRS+RS(L)
1320 230 CONTINUE
1330 MRS=TRS/29.
1340C ****
1350C COMPUTE KENDALL'S W FOR CATEGORY BEING CONSIDERED
1360C ****
1370 WNUM=0.
1380 DO 240 M=1,29
1390 WNUM=WNUM+(MRS-RS(M))**2
1400 240 CONTINUE
1410 SUMT=0.
1420 DO 250 J=1,N(I)
1430 SUMT=SUMT+ANSR(J,30,I)
1440 250 CONTINUE
1450 WDEN=((N(I)**2)/12.)*(29.**3-29.)-N(I)*SUMT
1460 KENW=WNUM/WDEN
1470 KENQ=N(I)*28.*KENW
1480C
1490C

```

```
1500C
1510C
1520C ****
1530C PRINT HEADINGS, STATISTICS, AND RANKSUM LISTING
1540C FOR CATEGORY BEING CONSIDERED
1550C ****
1560 PRINT," "
1570 PRINT," "
1580 PRINT," *****"
1590 PRINT," GREENLY/SCHULER THESIS LSSR 38-80"
1600 PRINT," *****"
1610 PRINT," "
1620 PRINT," SUM OF RANKS FOR SCALE B RESPONSES"
1630 PRINT," "
1640 GO TO (260,270,280,290,300,310,320,330),I
1650 260 PRINT,"AGENCY: HQ USAF"
1660 GO TO 340
1670 270 PRINT,"AGENCIES: UNIFIED COMMANDS"
1680 GO TO 340
1690 280 PRINT,"AGENCY: HQ AFLC"
1700 GO TO 340
1710 290 PRINT,"AGENCY: HQ AFSC"
1720 GO TO 340
1730 300 PRINT,"AGENCIES: ALC'S"
1740 GO TO 340
1750 310 PRINT,"AGENCY: ILC"
1760 GO TO 340
1770 320 PRINT,"AGENCIES: MAAGS/MISSIONS"
1780 GO TO 340
1790 330 PRINT,"AGENCIES: OFFICES OF DEFENSE COOPERATION"
1800 340 CONTINUE
1810 PRINT 350,KENW,KENO
1820 350 FORMAT(/,1X," KENDALL'S W= ",F5.3,5X,"KENDALL'S Q= ",F7.2)
1830 PRINT 360, N(I)
1840 360 FORMAT(/,1X," NUMBER OF INDIVIDUAL RANKINGS = ",I2)
1850 PRINT," "
1860 PRINT,"           QUESTION"
1870 PRINT,"           NUMBER      RANK-SUM"
1880 PRINT," "
1890 DO 375 K=1,29
1900 PRINT 370,K,RS(K)
1910 370 FORMAT(1X,18X,I2,7X,F7.2)
1920 375 CONTINUE
1930 380 CONTINUE
1940 STOP
1950 END
```

APPENDIX F
DATA FILES

The purpose of this appendix is to preserve the data files used in the statistical analysis phase of this research.

In order to create the data files, the possible answers to each question were assigned numerical ratings. That answer which indicated the strongest opinion that a particular item is a problem was encoded as a 5. In about half the items this was the answer "Strongly Agree." The opposite opinion was encoded as a 1. Answers to points in between were assigned values of 4, 3, or 2, as appropriate. In all cases, an answer of "Not Applicable" was encoded as Zero. The result of this procedure enabled the computer program to read those questions rated with a 5 as being the most important problems. Questions rated with values of 4, 3, 2, 1, or 0 were read as progressively less important.

This transformation from a word reply to a numerical rating was the first step of the analysis procedures. All further steps, including the transformation of the numerical ratings into rankings, was done by the FORTRAN computer program.

To read any of the three files, the following points must be kept in mind:

a. Each pair of lines corresponds to one respondent. Thus, lines 0010 and 0015 are the first; lines 0020 and 0025 are the second, etc.,

b. The sequence of data within the pair of lines is:

(1) First line: line number, ratings for items
1 to 15.

(2) Second line: line number, ratings for items
16 to 29.

c. About half of the items were coded as 5 if "Strongly Agree" was answered, and about half were coded 1 if "Strongly Disagree" was answered.

(1) Those items for which "Strongly Agree" was coded 5 were: 1, 2, 3, 7, 10, 15, 17, 20, 21, 23, 24, 27, and 29.

(2) Those items for which "Strongly Disagree" was coded 5 were: 4, 5, 6, 8, 9, 11, 12, 13, 14, 16, 18, 19, 22, 25, 26, and 28.

0001C *****

0002C DATA FROM ALL RESPONDENTS REGARDING

0003C AIR FORCE-WIDE PROBLEMS

0004C *****

0010 3. 3. 2. 3. 4. 4. 3. 4. 3. 3. 3. 3. 3. 3. 4. 4.
0015 3. 3. 3. 2. 3. 4. 3. 3. 3. 2. 3. 3. 3. 4. 4.
0020 3. 4. 3. 4. 5. 5. 5. 1. 4. 3. 3. 2. 3. 5. 4.
0025 4. 3. 3. 3. 5. 4. 1. 3. 5. 2. 1. 4. 4. 1.
0030 1. 4. 1. 4. 3. 3. 4. 3. 1. 0. 0. 0. 0. 0. 0.
0035 2. 0. 0. 1. 4. 0. 0. 0. 0. 2. 0. 0. 0. 0. 0.
0040 0. 3. 3. 3. 3. 3. 5. 3. 3. 3. 3. 3. 3. 3. 4.
0045 3. 3. 3. 4. 4. 4. 3. 3. 3. 3. 3. 5. 3. 3.
0050 3. 5. 3. 5. 3. 3. 4. 3. 3. 3. 3. 3. 3. 3. 3.
0055 4. 3. 3. 3. 3. 5. 3. 3. 5. 3. 3. 3. 3. 3.
0060 3. 2. 1. 4. 5. 4. 4. 2. 3. 2. 3. 3. 3. 2. 4.
0065 2. 5. 2. 3. 5. 4. 1. 5. 3. 5. 4. 5. 4. 2.
0070 4. 3. 3. 0. 0. 0. 3. 3. 2. 3. 0. 3. 3. 2. 2.
0075 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3.
0080 0. 2. 2. 3. 3. 2. 3. 1. 0. 3. 3. 2. 3. 3. 3.
0085 2. 3. 2. 4. 4. 4. 2. 4. 0. 5. 3. 4. 5. 2.
0090 1. 2. 3. 3. 3. 3. 4. 3. 3. 3. 3. 3. 3. 2.
0095 3. 3. 5. 1. 3. 4. 2. 1. 3. 2. 3. 5. 3. 3.
0100 2. 5. 4. 4. 2. 4. 4. 3. 4. 2. 3. 4. 3. 2. 3.
0105 2. 5. 2. 1. 4. 4. 2. 3. 4. 2. 3. 5. 2. 3.
0110 3. 4. 3. 3. 3. 3. 4. 5. 2. 3. 3. 3. 3. 3. 4.
0115 3. 3. 3. 3. 3. 4. 3. 4. 3. 2. 3. 3. 3. 2.
0120 3. 2. 5. 2. 4. 3. 2. 2. 3. 3. 2. 3. 2. 2. 3.
0125 2. 2. 3. 3. 4. 4. 2. 4. 3. 3. 3. 2. 5. 3.
0130 4. 4. 2. 4. 4. 3. 2. 3. 5. 3. 3. 3. 0. 5. 3.
0135 4. 3. 3. 2. 4. 3. 3. 4. 3. 3. 3. 4. 4. 1.
0140 4. 3. 3. 3. 3. 3. 5. 5. 3. 4. 3. 3. 3. 5. 3.
0145 3. 3. 3. 3. 4. 3. 3. 4. 4. 3. 3. 3. 3. 3.
0150 2. 2. 2. 3. 3. 3. 4. 2. 3. 2. 3. 3. 3. 3. 4.
0155 3. 3. 2. 2. 4. 2. 3. 5. 3. 3. 3. 4. 3. 3.
0160 3. 3. 3. 2. 3. 2. 4. 2. 4. 1. 4. 3. 2. 2. 4.
0165 3. 2. 2. 2. 4. 1. 4. 4. 4. 3. 4. 4. 4. 2.
0170 4. 3. 1. 2. 2. 4. 5. 3. 2. 3. 3. 3. 0. 2. 5.
0175 5. 2. 2. 2. 4. 5. 3. 5. 5. 3. 3. 4. 3. 2.
0180 5. 4. 5. 2. 4. 2. 5. 5. 2. 2. 4. 3. 3. 3. 5.
0185 2. 3. 3. 3. 4. 4. 3. 5. 5. 3. 3. 4. 2. 4.
0190 4. 3. 4. 4. 4. 3. 3. 4. 2. 3. 2. 3. 0. 2. 4.
0195 3. 5. 2. 3. 4. 3. 2. 5. 4. 2. 3. 3. 3. 2.
0200 5. 5. 1. 5. 4. 4. 4. 3. 3. 3. 1. 3. 3. 1. 3.
0205 1. 3. 3. 3. 5. 3. 2. 5. 3. 5. 3. 4. 5. 3.
0210 4. 5. 4. 5. 3. 2. 5. 3. 3. 4. 3. 3. 3. 4. 4.
0215 5. 4. 2. 1. 4. 4. 2. 3. 4. 4. 3. 4. 5. 2.
0220 4. 2. 3. 4. 2. 2. 5. 5. 3. 5. 4. 2. 3. 2. 5.
0225 4. 5. 1. 1. 4. 4. 2. 5. 4. 3. 2. 5. 4. 5.
0230 5. 5. 1. 2. 3. 2. 5. 2. 2. 2. 2. 2. 2. 5. 4.
0235 4. 4. 2. 2. 4. 4. 2. 5. 2. 4. 2. 2. 5. 2.

0240 4. 2. 4. 5. 4. 3. 3. 4. 3. 3. 3. 4. 3. 4. 4.
0245 4. 4. 4. 5. 4. 3. 3. 5. 3. 3. 3. 4. 4. 4.
0250 4. 5. 4. 2. 4. 4. 4. 2. 2. 2. 2. 4. 2. 4.
0255 4. 2. 4. 2. 4. 2. 4. 4. 3. 2. 4. 4. 2. 4.
0260 4. 2. 1. 0. 0. 0. 0. 2. 0. 0. 0. 0. 0. 0. 2. 5.
0265 4. 0. 0. 1. 0. 2. 1. 5. 0. 2. 0. 5. 2. 0.
0270 5. 3. 5. 3. 3. 0. 0. 0. 0. 0. 0. 0. 0. 0. 5. 5.
0275 0. 0. 0. 1. 0. 4. 0. 0. 4. 1. 0. 5. 1. 0.
0280 3. 3. 5. 5. 4. 2. 5. 3. 3. 3. 3. 4. 3. 3. 5.
0285 4. 2. 4. 3. 5. 4. 4. 5. 3. 3. 3. 5. 4. 5.
0290 5. 4. 1. 1. 4. 2. 5. 4. 3. 5. 4. 3. 1. 5. 5.
0295 2. 3. 3. 1. 5. 5. 5. 4. 2. 5. 5. 5. 3. 4.
0300 5. 1. 1. 3. 4. 4. 1. 2. 3. 3. 1. 2. 3. 1. 5.
0305 1. 2. 2. 1. 3. 4. 3. 5. 1. 2. 4. 5. 5. 3.
0310 5. 3. 5. 2. 4. 3. 5. 4. 3. 5. 3. 5. 3. 5. 5.
0315 2. 3. 4. 4. 5. 5. 4. 2. 4. 4. 4. 5. 4. 1.
0320 2. 4. 5. 4. 4. 3. 3. 3. 3. 0. 3. 1. 1. 1. 1.
0325 1. 5. 3. 1. 5. 5. 3. 2. 5. 1. 3. 5. 5. 3.
0330 3. 3. 2. 3. 1. 2. 2. 4. 3. 3. 3. 3. 2. 3. 2.
0335 3. 3. 5. 2. 3. 4. 4. 4. 2. 2. 4. 4. 2. 4.
0340 5. 2. 4. 4. 4. 2. 5. 2. 2. 2. 3. 3. 1. 2. 4.
0345 4. 2. 1. 4. 5. 5. 2. 5. 5. 4. 3. 5. 5. 4.
0350 4. 2. 2. 4. 2. 4. 4. 2. 2. 3. 2. 2. 1. 1. 5.
0355 2. 2. 4. 2. 3. 2. 1. 5. 4. 1. 2. 2. 3. 2.
0360 2. 2. 1. 5. 4. 5. 5. 2. 1. 2. 2. 3. 3. 3. 5.
0365 1. 3. 2. 3. 4. 4. 1. 5. 3. 4. 3. 4. 2. 2.
0370 5. 0. 3. 5. 2. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3.
0375 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3.
0380 5. 3. 3. 4. 5. 3. 3. 2. 3. 3. 3. 1. 1. 3. 5.
0385 3. 3. 1. 2. 5. 3. 1. 0. 4. 3. 3. 3. 2. 1.
0390 4. 4. 4. 5. 5. 5. 5. 4. 4. 4. 4. 3. 2. 4.
0395 4. 4. 3. 1. 5. 4. 2. 5. 3. 5. 4. 5. 3. 5.
0400 2. 4. 5. 5. 5. 5. 2. 1. 1. 5. 5. 5. 1. 4. 5.
0405 1. 1. 5. 5. 1. 2. 1. 1. 1. 2. 0. 5. 2. 1.
0410 2. 2. 1. 4. 2. 4. 4. 2. 2. 4. 4. 2. 3. 2. 2.
0415 4. 4. 2. 4. 4. 4. 2. 4. 5. 4. 2. 4. 4. 2.
0420 2. 1. 1. 4. 2. 1. 5. 2. 3. 3. 3. 2. 4. 2. 4.
0425 3. 0. 2. 2. 5. 2. 4. 4. 2. 3. 3. 4. 3. 4.
0430 3. 1. 4. 1. 1. 1. 4. 2. 1. 1. 4. 3. 3. 2. 5.
0435 2. 1. 3. 2. 2. 4. 3. 0. 0. 5. 3. 4. 3. 4.
0440 5. 5. 0. 5. 5. 5. 5. 1. 0. 4. 5. 1. 0. 0. 0.
0445 0. 0. 0. 1. 5. 0. 1. 0. 0. 0. 0. 0. 0. 3. 1.
0450 1. 1. 1. 5. 5. 2. 5. 3. 3. 0. 2. 3. 3. 1. 3.
0455 3. 3. 3. 3. 3. 4. 3. 3. 3. 3. 3. 4. 3. 3.
0460 3. 3. 3. 4. 3. 3. 4. 3. 3. 3. 3. 3. 3. 3. 5.
0465 3. 3. 3. 3. 3. 3. 3. 5. 3. 3. 3. 3. 3. 3. 3.
0470 1. 4. 1. 5. 4. 5. 5. 1. 2. 1. 5. 1. 3. 5. 5.
0475 2. 3. 1. 5. 4. 4. 2. 0. 0. 5. 2. 1. 3. 1.
0480 2. 2. 2. 1. 1. 1. 3. 2. 2. 0. 2. 2. 3. 2. 3.
0485 2. 3. 3. 1. 4. 4. 2. 4. 5. 2. 2. 4. 2. 3.

0490 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3.
0495 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3.
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0575 4. 4. 3. 4. 4. 4. 2. 3. 3. 4. 3. 4. 4. 2.
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0630C *****
0640C END OF FILE
0650C *****

0001C *****

0002C DATA FROM ALL RESPONDENTS REGARDING

0003C PROBLEMS TO THEIR OWN AGENCIES

0004C *****

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0485 4. 4. 3. 4. 4. 4. 2. 3. 3. 4. 3. 4. 4. 2.

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0565 2. 3. 2. 2. 5. 4. 2. 4. 0. 2. 2. 4. 4. 4.
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0640C *****
0645C END OF FILE
0650C *****

0001C *****

0002C DATA FROM RESPONDENTS WHO HANDLE FMS MUNITIONS

0003C CASES WEEKLY REGARDING AIR FORCE-WIDE PROBLEMS

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0035 2. 0. 0. 1. 4. 0. 0. 0. 0. 2. 0. 0. 0. 0. 0.
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0055 2. 5. 2. 3. 5. 4. 1. 5. 3. 5. 4. 5. 4. 2.
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0065 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3.
0070 3. 4. 3. 3. 3. 3. 4. 5. 2. 3. 3. 3. 3. 3. 4.
0075 3. 3. 3. 3. 3. 4. 3. 4. 3. 2. 3. 3. 3. 2.
0080 3. 2. 5. 2. 4. 3. 2. 2. 3. 3. 2. 3. 2. 2. 3.
0085 2. 2. 3. 3. 4. 4. 2. 4. 3. 3. 3. 2. 5. 3.
0090 4. 4. 2. 4. 4. 3. 2. 3. 5. 3. 3. 3. 0. 5. 3.
0095 4. 3. 3. 2. 4. 3. 3. 4. 3. 3. 3. 4. 4. 1.
0100 4. 3. 3. 3. 3. 3. 5. 5. 3. 4. 3. 3. 3. 5. 3.
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0225 4. 0. 0. 1. 0. 0. 2. 1. 5. 0. 2. 0. 5. 2. 0.
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0310 5. 5. 0. 5. 5. 5. 1. 0. 4. 5. 1. 0. 0. 0.
0315 0. 0. 0. 1. 5. 0. 1. 0. 0. 0. 0. 0. 3. 1.
0320 1. 4. 1. 5. 4. 5. 5. 1. 2. 1. 5. 1. 3. 5. 5.
0325 2. 3. 1. 5. 4. 4. 2. 0. 0. 5. 2. 1. 3. 1.
0330 2. 2. 2. 1. 1. 1. 3. 2. 2. 0. 2. 2. 3. 2. 3.
0335 2. 3. 3. 1. 4. 4. 2. 4. 5. 2. 2. 4. 2. 3.
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0395 2. 3. 2. 3. 4. 4. 2. 4. 4. 2. 3. 4. 4. 5.
0400C *****
0410C END OF FILE
0420C *****

APPENDIX G
SURVEY RESPONDENTS' COMMENTS

This appendix is a compilation of pertinent, edited comments received in response to the survey. The comments have been organized by question and responding agency. While the comments have been altered as far as sentence structure and abbreviations, the original intent remains unchanged. Due to the current status of MAAGs, Missions, and ODCs, they have been grouped together within this appendix.

A number of comments were deleted by the authors as being inappropriate for publication. To provide a picture of the worthwhile sentiments of these comments, the authors offer the following summation. "Finger pointing" was widely apparent. It would appear that a lack of communication exists among the various agencies polled in this survey. Moreover, it cannot be overemphasized that a wide chasm appears to exist between the policy agencies and the implementing agencies.

It is hoped that experienced managers in FMS will be able, from the comments, to improve upon the present environment. This candid expression of the problems in the field should receive the widest dissemination.

1. A lack of sufficient lead time for processing after a letter of request for munition items is received is a problem.
-

Headquarters USAF:

As a collateral agency, we don't get impacted by the short time; the problem is most acute since advent of Single Manager for Conventional Ammunition (SMCA). This adds an organizational layer (workarounds have been devised and they are fairly successful, but require exceptional treatment in FMS and IM worlds).

Depends how critical the requirement is to the country and the USAF stock position. If U.S. national objectives are involved, shipment usually is not a problem but again judgment and your perceived view determines what, if any, problem will exist.

Unified Command:

I have no feel for time required to process and prepare LOAs. I do know that AF responsiveness is normally better than the other services and perceived with gratitude by the customers. So if your other responses indicate a problem, at least realize that it is for a good cause.

Headquarters AFLC:

The flow of the request from HQ USAF to the ILC to OO-ALC, and in some cases to the Army on the DOD single point contact for munitions, delays the overall processing for P&A data.

There are occasional "hurry-up" cases which result in P&A studies conducted over the phone.

The "single manager" concept has resulted in unresponsive P&A studies.

Headquarters AFSC:

I have interpreted this to apply to preparation of P&A data. Our organization has been able to ease this problem by constant contact with HQ USAF and HQ AFSC (ASD respondent).

Over 20 people handle P&A responses after it is prepared--simply getting it coordinated, transmitted, and signed is a problem.

Seems that, occasionally, releasability guidelines come down after LOA is written and implemented.

ALC:

In some cases, time is so short that telephone response is only available method to meet suspense.

75% of P&A request do not allow thirty or even twenty-one processing days. Data being requested is not defined in order that the request can be processed timely.

ILC:

To comply with the MASM and AFR 400-3, which state the LOA is to be tendered to the foreign country within sixty days of receipt of their LOR, is practically impossible when you must allow thirty days for P&A receipt and thirty days for DSAA countersignature.

Often the delivery of a munition, especially missiles, occurs before support equipment and spares are available. This is usually because of political pressure.

MAAG/Mission/ODC:

Applies to all FMS cases.

For CAD/PAD items, AFLC/ALC have about six months to aggregate data from FMS customer requests, prepare LOAs, and contract with a commercial firm for production. With an open ended (blanket order) FMS case, the processing time for a specific request could be shortened.

Depends on the interrelation of a country's fiscal year and budget cycle with that of the U.S., when both are different.

Too much processing lead time is the problem; ammunition requirements should be handled expeditiously since the pipeline time is so excessive. The sooner the requirement is processed, the quicker items are obtained. It is hard to explain to the customer the long delays in processing their requests, especially when munitions are on-hand and

delay of the request means that the ammunition will miss the annual ammunition ship and the country must wait another year.

2. The lack of a munition expert within each agency processing FMS munition sales cases is a problem.
-

Headquarters USAF:

Why would you want a munitions expert in SAAC or any other administrative activity? A munitions expert would only be needed to determine requirements or pricing and possibly transportation.

Processing munition cases gives me some workload, but assignment of a munitions expert to each PAI division would be wasteful. We do need one in PAIP or PAIX to handle routine matters not tied to USAF inventory or current operations.

Unified Command:

I would say that lack of an expert would be a problem, but experts are available here and in the agencies with whom I deal.

Headquarters AFLC:

Munitions expertise is only required at the P&A development activity.

Although not mandatory, it would help if an expert was available to assist in resolving specific problems.

Personnel with munitions backgrounds at all levels of case processing, particularly within MAAGs or missions, would help insure that the purchaser was acquiring the correct item within the time frame needed. There have been instances where the purchaser ordered or received incomplete items, items not meeting the required application, and arriving too early or late to meet his requirement.

ALC:

I do not think an expert is needed as long as there are qualified people in the FMS area to insure that procedures are followed.

We have expertise in depth at the working level, but lack some in the case manager at the local level.

Most expertise required in our cases is provided by the inventory manager.

ILC:

Assignment of a munitions expert within each agency could pay dividends, provided he maintained a high profile, especially in the procedures area.

The processing of munitions cases is no problem.

P&A data is provided by OO-ALC as an assigned task. We don't have truck experts, radar experts, or fry pan experts in every organization either.

MAAG/Mission/ODC:

A munitions expert is desirable, but not absolutely necessary. Anyone can manage an FMS case. Since my background is Munitions Supply, it is adequate most of the time, except for technical problems.

Lack of full library of technical pubs imposes an occasional problem with item identification.

Only a problem when working a ROID or when technical information is required.

Generally, it is only necessary to know supply and FMS procedures to process a case. The experts on munitions only have a function within the process and probably do not (and do not have to) know "FMS procedures."

3. The fact that only defined (firm) order cases can be used for FMS munition cases is a problem.
-

Headquarters USAF:

This normally has no effect. However, if requirements and all components are not identified on the original LOA, a DD Form 1513-1 or 2 may need to be processed which could delay the munitions use by the requesting country. Firm order cases provide good control by USAF to insure only authorized munitions are shipped or provided to an FMS customer.

Unified Command:

Problems are normally with availability, procurement lead time, diversion, economical buys, etc., which the use of open end cases would aggravate, not solve.

Headquarters AFLC:

Defined order cases should not be required for "non-explosive" items.

This may present a problem to countries and security assistance personnel in meeting customer requirements. It is considered necessary however, in managing USAF munitions inventories. Munitions receive line item management from Congress, OSD, right down to the ALC item manager. Munitions are procured on an annual basis, lead time away, and are not replenished as they are used like spares or EOQ items. Due to their criticality in meeting world wide inventory objectives (which change frequently), the USAF cannot afford the chance that sales countries might invade the USAF inventory.

Headquarters AFSC:

Personnel to support FMS case management cannot be obtained until LOAs are signed. All planning and work done prior to LOA signature uses USAF assets.

ALC:

The only way possible to have control on ammunition items it to insure all items which apply to ammunition (even though that item may not be explosive) are part of a firm order case.

This can cause uneconomical quantities due to unplanned small case quantities that come in during a year for procurement.

Only firm order cases should be used. A statement should be included in the DD Form 1513 that the country would be responsible for all price increases.

Many munitions are explosive and have shelf and service life; therefore, they must have a strict control.

Inflexibility (quantity-wise) could cause problems under certain conditions, regardless of whether the item required is munitions or some other item.

ILC:

Firm order cases are essential at this time, if we are to maintain necessary control.

This is especially true for replenishment of "bits and pieces" which fall in munitions stock classes. The bits and pieces are not explosive but still must be ordered on firm order cases. This is a problem.

The amount of control required on these items necessitates line item control, which is hard to do on a blanket order case where the FMS customer submits requirements. I do think that a blanket order case (against which country is not authorized requirement submission) should be discussed. This would decrease administrative lead time while requiring the same channels of approval on individual requests.

This is the only method to maintain control of munitions.

With the sensitivity of munition items, adequate tracking and management of FMS cases is possible only through defined order cases. It would be chaotic should blanket order cases be allowed.

MAAG/Mission/ODC:

It's the one way you can track an item to insure the bill is processed and paid. A blanket order case would lead to an uncontrolled situation and the possibility of selling non-releasable items.

Some munitions items could be ordered on a FMSO II or open end case. The biggest problems are procurement lead time and the country not buying in advance of the requirement.

An open case could be beneficial for small items (.38 cal., etc.) but since ammunition is delivered but once a year, it doesn't really matter. Firm order cases are better defined/controlled.

While firm order cases are required for most munitions items, I feel that more blanket order cases can be used for CAD/PAD items, inert components, and minor munitions such as marine markers, smoke grenades, distress signals, etc.

4. The training level of the purchasing nation's personnel is sufficient to implement munition sale cases effectively.
-

Headquarters USAF:

A purchasing nation does not implement munition sale cases. The USAF implements FMS cases. A purchasing nation only defines their requirements and requests a letter of offer and acceptance. Their ability to do this is contingent on USG willingness to provide data, hardware and training.

Unified Command:

Countries differ, but all in my experience could stand some improvement.

Many countries are lacking in expertise even on older munitions items.

Headquarters AFSC:

Varies significantly from nation to nation.

ALC:

Countries do not understand munitions, except to know they have a need for 150 bombs, etc. They, in most cases, do not realize to make a complete bomb they need approximately fifteen other components.

We have problems in this area to turnover of our own personnel, constant changes, the complexity of the system as a whole, and the quantity of regulations (AFM 67-1, AFR 400-3, MASM, etc.) that we are required to work with.

Many case P&A requests are incomplete, causing severe problems in that countries receive less than is needed for a complete end item.

ILC:

Especially CAD/PAD buy program.

There is always room for improvement through additional training.

MAAG/Mission/ODC:

In-country training by DISAM team would help. Americans don't need this training, but country nationals do.

They're just "coming up to speed."

Even with the assistance and training provided the host country, they still do not have expertise to implement, process, control ammunition cases (or any other cases) effectively.

5. Purchasing nation's personnel understand the U.S. directives governing munition sales.

Unified Command:

Since most U.S. personnel can't "penetrate the maze," how can we expect foreign purchasers to understand our directives?

Headquarters AFLC:

Even USAF personnel don't understand.

Headquarters AFSC:

They do not read the "fine print" on the LOAs.

It is essential that the customer be made aware of the lead times necessitated by our bureaucracy (e.g., lead time from request for offer to case implementation and procurement lead times).

ALC:

It is doubtful, because our own nation's personnel seem to have their share of difficulty understanding U.S. directives governing various types of sales to foreign governments.

No, in most cases, the foreign countries do not understand our procedures. Procedures should be written to address the layman, not the technician.

ILC:

Purchasing nation personnel, with their great influx of members, have difficulty understanding USG directives, laws, regulations, and FMS in general, let alone munitions. This is an area where the MAAG and other USG personnel should become more involved.

This would have to be determined on a country-to-country basis. Some countries' personnel understand the directives better than some USAF personnel.

They know them but continue to ask questions hoping things will change.

MAAG/Mission/ODC:

There is not even a basic knowledge here of the FMS system.

Getting approval from the Department of State on FMS cases is our big problem, and it affects planning, especially in CAD/PAD cases.

There are only few exceptions in which we can say the statement is true. One of the responsibilities and functions of our office is to inform and teach host country personnel (senior and subordinate) FMS and USAF supply procedures. High (yearly) turnover of military and civilian personnel (at ministerial and field organizations) causes the level of knowledge to be low.

6. Purchasing nation's personnel follow U.S. directives governing munition sales.
-

Headquarters USAF:

They follow them generally. However, if they find a directive is not in their interest, a country will look for ways to circumvent the directives.

Unified Command:

Only as much as MAG, MTT, assistance teams, etc., show them how and CONUS agencies force adherence to the rules. Some rules are only observed when it suits foreign policy, and every country knows it. As we only selectively enforce the rules, we should not be surprised when customers try to bend them to their own ends.

Headquarters AFLC:

Bad question. Because we must, they must; they do not want to.

How far could a purchaser get if he didn't follow U.S. directives?

There is some evidence that countries might follow call letter procedures more closely to obtain maximum CAD/PAD support.

Headquarters AFSC:

Customer frustration resulting from USAF bureaucratic delays often encourage the customer to attempt to circumvent the system.

ALC:

Probably better than we could follow theirs if the roles were reversed.

ILC:

They follow our directives to the extent we allow.

MAAG/Mission/ODC:

I believe they just don't know/understand them well, or
don't relate to our way of business.

They can't when they don't understand the ground rules.

Generally, all FMS cases are processed through the MILGP,
which provides all technical assistance on case preparation.

Neither they nor I have the directives.

7. The lack of long range planning (3 to 5 years) for FMS of munition cases is a problem.
-

Headquarters USAF:

CAD/PAD items usually cause a purchasing country problems at first when they do not respond properly to the yearly call letter. Foreign governments always like quick delivery of all requests. But since we cannot buy for FMS without a firm order, the purchaser countries must be so apprised.

Unified Command:

This cannot be a blanket statement. Some long range planning is done, more is needed, both in-country and within AF agencies with FMS responsibilities.

It's a problem for us, too. Little of what we expected to be available from production in 1980, when we looked ahead in 1975-77, is now available.

Headquarters AFLC:

Increasing lead times are mandating a planning system.

Headquarters AFSC:

An inadequate number of people and travel funds are provided to support FMS planning.

Considering the procurement planning activities ongoing in the SPO and the contractor facilities, it behooves us to have realistic planning numbers to determine cost impacts related to economies of scale and contractor production capacities.

ALC:

May be a viable method of "windowing" the potential workload and assigning personnel against the estimated workload. Would assure that timely response could be given to FMS cases.

This one condition causes considerable additional cost in uneconomical buying and handling many cases rather than a single large order. In addition, it impacts DOD's management of the production base.

Countries do not implement their cases to provide for procurement lead times or production slippages due to strikes, etc. Also some countries have transportation problems.

In most cases, the foreign countries tend to under-forecast due to the lack of experience and funding problems.

ILC:

This is the problem.

It is very difficult for most countries to realize that they must plan ahead. They feel they should be able to order and get munitions at a moment's notice.

MAAG/Mission/ODC:

We lose financially in selling a 1975 item from active inventory for expediency, and backfilling at 1980 prices.

This country does no planning in the out-years even though we have impressed upon them the long lead times. They rely on accelerations from U.S. stocks.

Lead times are best indicator from the U.S. standpoint-- 24/36 not uncommon. How about a periodic listing of immediately available items, with an annual listing of all items to reflect lead time? Further, why not a publicized annual buy program similar to the USAF's ejection cartridge system of world-wide purchases?

Although I have only been involved in FMS for six months, I have seen enough and reviewed enough LOAs and P&B estimates to note that production lead times have increased tremendously and that very few munitions items are available from DOD stocks. In short, I feel that the U.S. has not accomplished sufficient planning for FMS sales.

There is little to no planning.

It has been our experience that most host country military organizations do very little planning. Planning for certain munitions buys should be made easier if satisfactory

records of shelf-lifes, installations, etc., were kept. The data on these records could be invaluable, if up to date, when the call for buys is distributed. However, it is even difficult to find planning for eighteen to twenty-four months. As a consequence, munitions buys by host Air Forces is not a smooth, methodical process. It seems that the buying situation starts when it reaches a critical mass.

Some evidence of long range planning to form groups of EOQ (economic order quantities) has appeared in last twelve months.

8. U.S. Government costs are fully recovered from the foreign government in FMS of munition cases.
-

Headquarters USAF:

Doubt it. I personally don't agree with pricing methods based on historic (stock list cost) vice market value.

Accelerated rate of inflation probably makes it impossible to judge all costs. Also, disagreements between the GAO and the USAF as to what true costs are impacts points of view on whether full FMS costs are recovered. But, the field seems to make efforts to collect all costs.

Unified Command:

I think we do well at it.

Headquarters AFLC:

We are supposed to collect actual transportation charges but we are not. Rather, we are collecting a percentage factor of the material cost. I don't know whether this means we're collecting too much or not enough.

Normally, the correct price is charged. There are a few cases with serious errors.

Items are sold at less than replacement cost; prices are reduced on inventory items with less than full shelf life, however as much as ten years life may remain. The USG pays to cosmetically repair otherwise serviceable items prior to sale from inventory.

Headquarters AFSC:

No method exists to fully track and recover costs.

ALC:

Lack of clear pricing policies, 100 percent confirmation of shipments through transportation system, and applying proper development costs, indicates that we don't recover full reimbursement of costs.

Many actions by part-time FMS personnel are not recovered.

We lack visibility of total costs in the working area. The basic weakness is the accounting methods used by the USG, i.e., no actual cost accounting is really done.

ILC:

We're getting better all the time and the GAO reports detailing the monies we lose each year through non-recoupment of FMS charges should solve the situation in the future.

I honestly don't agree that the U.S. ever fully recovers all costs on any FMS case.

I'm not sure that all transportation charges on shipments of munitions are fully recovered.

MAAG/Mission/ODC:

With each FMS billing statement from SAAC, I find the Military Departments reversing a delivery transaction because they have no record of delivery. I then must contact them for the bill.

However, it is my opinion that, in some cases, damage caused by the freight forwarder is being claimed against and paid for by the USG.

To an extreme point.

9. The system of providing changes to munition technical orders (TOs) is adequate.
-

Headquarters AFLC:

The main problem appears to be in the country, i.e., no effective TO program.

Headquarters AFSC:

The system sounds good, but experience (visits in-country) shows that TO changes are not being received.

ALC:

Most countries are slow in updating their TOs.

ILC:

It is where blanket order TO cases are in effect.

The TO system is working fairly well. If any problem exists, it could be in the area of releasability.

MAAG/Mission/ODC:

I don't know why, but this is a chronic problem. The U.S. publications system has always been a problem.

It is very unresponsive to the actual need. For FMS items (no longer in active USAF inventory), this is practically a myth.

10. Foreign government insistence on a high ranking U.S. officer at all country reviews involving munition sales is a problem.
-

Headquarters USAF:

I haven't seen this happen. However, FMS customers frequently ask questions concerning technical information or tactics using a weapons system.

Unified Command:

If we send "workers" only, they won't have access to the host country decision makers who make the system work.

Headquarters AFSC:

Availability is sometimes difficult.

ALC:

ALC usually sends a GS-11 civilian.

In our view, these are working level meetings and high level officer attendance is not contributory to the effort.

Yes; protocol is important to most foreign governments.

Usually the high ranking official is not knowledgeable of detailed information about case management.

ILC:

This is not a requirement in countries I work with.

This is a diplomatic matter rather than logistics.

MAAG/Mission/ODC:

I have certainly seen this to be the case in my experience.

11. Initial munition TOs are provided in the time frame required by the foreign government.

Headquarters USAF:

They are if available.

Few complaints have been noted.

Unified Command:

Little is provided in the time frame required.

Headquarters AFLC:

Usually--again most problems are "country" or freight forwarder problems.

Headquarters AFSC:

Delays are caused by disclosure requirements which require publishing of country-unique TOs.

ALC:

Many TOs are not available with first deliveries.

ILC:

This is a general problem with most developmental materiel, but not with inventory items.

Provisions for such are included in major system sales and deliveries have been made without problems.

MAAG/Mission/ODC:

Never.

Distribution and translation problems in FMS countries vary, but since this is a systemic USAF problem, they must also experience it.

It took a year from time of request for missile TOs before the DD-1513 even appeared.

A new or substitute munition frequently arrives without any TOs being available. A procedure needs to be established to include necessary TOs with the munitions shipment in these cases.

12. Surcharge rates charged to purchasing nations recover total cost for packing, crating, and handling of munition items.
-

Headquarters AFLC:

This data is not available--but should be.

Headquarters AFSC:

There is no way to evaluate this aspect. I suspect we do not recover all costs.

ALC:

The USG lacks accounting methods to identify some costs.

MAAG/Mission/ODC:

We doubt this could be true.

We recover to an extreme point.

13. The future costs of shipping replacement items overseas for replacement of munitions sold from overseas depots are charged to the purchasing nation.
-

Headquarters AFLC:

This should be done, but may not be in all cases!

ALC:

Yes, within our ability to forecast future costs.

ILC:

If we are going to deplete stocks from an overseas depot, the country should be responsible for the shipping costs to replenish.

MAAG/Mission/ODC:

They are charged at some point in time.

14. Present proof of delivery procedures are adequate.

Headquarters USAF:

We are not aware of any customer complaints.

Unified Command:

We have never had a problem.

Headquarters AFSC:

We instituted a positive feedback system to report when items are shipped and then received in country (shipment by shipment).

ALC:

Any items shipped from depot stock are not confirmed. 100 percent confirmation is needed.

There are many system problems in HO51, HO78, DO34, and DO09 at this time. Many duplicate actions get billed, and also many get missed, requiring manual correction.

The interface between DO34, JO41, HO51, and HO75 Systems is less than satisfactory.

ILC:

Tracking of deliveries through freight forwarders is a problem.

MAAG/Mission/ODC:

Receipts should be forwarded to the originating activity.

It is always a problem when individuals handle sheets of paper that can get lost.

This is our biggest problem. Ocean terminals are supposed to notify the ODC of the ammunition ship departure. We are also supposed to get GBLs, manifests, etc. However, many times, GBLs and manifests arrive the same time the ship does. This is unacceptable. We need all data in advance to notify the host country, obtain transportation, stevedores, etc.

15. When FMS customer countries specify new and unused munition items it increases total costs.
-

Headquarters USAF:

It depends on what the USG is buying at the time of the request.

Unified Command:

It also provides more positive quality control. You get what you pay for.

Headquarters AFLC:

It may or may not, depending on the circumstances of each sale.

If new/unused items are necessary, they should be acquired from new procurement. Many times, new items cannot be provided from inventory because of shelf life expiration.

It shouldn't--since we should be going on procurement for most FMS requirements and thus buying new and unused anyway.

ALC:

Specifying new or unused almost always causes a cost increase, regardless of the item involved. It also has an adverse effect on support when the USAF has adequate used serviceable assets to support the requirement, but can't utilize them because new or unused is required to satisfy the requirement.

Costs will be higher due to inflation and also due to the small quantity bought (not consolidated with other buys).

In cases of out-of-stock sales, this can be a problem.

It is not very practical either.

ILC:

Naturally.

Normally, when FMS customers specify "new and unused" for any FMS case, total costs increase.

Normally speaking, a country will not ask for new and unused. Further, unless we have excess stocks in the USAF, the item will be procured anyway.

It increases purchaser costs--not USG costs.

Not only does it affect costs, it also can affect the delivery schedule.

MAAG/Mission/ODC:

The importance of buying "state of the art" cannot be overemphasized for true savings through "life cycle costs." Inadequate studies and presentation of data contribute to this problem.

We do know that repaired munitions (catapults and other CAD/PADs for ejection seats) are substantially more expensive if stocked in component parts and repaired when required.

16. Munition logistics follow-on support programs for foreign military sales are adequate.
-

Unified Command:

This is normally true for USAF munitions but not always so for Navy and Army.

Munitions logistics follow-on support is less than satisfactory for everybody.

Headquarters AFLC:

Basically, the responsibility is with the country. Often, they do not have a good planning system.

Headquarters AFSC:

Due to approval of unique country requirements, customers are often tied to the contractor for support.

ALC:

Munitions follow-up support would be adequate if the country would follow the annual buy procedures.

MAAG/Mission/ODC:

For major buys, it is excellent overall.

Local transportation creates follow-on support problems, but the program itself seems adequate.

17. Time delays result by the prime munitions contractor not being present for program reviews.
-

Headquarters USAF:

I have not seen this happen. Normally, time delays occur before a program is implemented; then the USAF and contractors negotiate a contract. This can cause a five-month delay when no production line is operating for a specific munitions item.

Unified Command:

The contractor interface is a major source of problems. His presence at program reviews is essential.

Headquarters AFLC:

It is sometimes helpful, but often doesn't provide information not already available.

Headquarters AFSC:

I am strongly opposed to contractor participation in program reviews. Entirely too much marketing goes on and not enough consideration of program options. The contractor should only be called in after USAF/customer discussions.

ALC:

Contract schedules are not greatly flexible anyway, and this area does not appear to be subject to a great deal of change.

ILC:

The munitions expert (addressed in question 2) attending these reviews could enhance the overall munitions program.

MAAG/Mission/ODC:

See no need to have a contractor at program reviews.

18. Quality Assurance (QA) charges are recouped in munition sale cases.

Headquarters USAF:

Pricing policies don't cover indirect O&M engineering charges.

Headquarters AFLC:

Accounting problems exist in this area.

ALC:

After the fact, sometimes a year or longer after delivery of material.

As we know and have visibility, yes. Again, we have the same cost accounting problem.

ILC:

I know some are, but can't guarantee all are.

Procedures are continually being improved to insure compliance of the above.

Billings often occur several years after the fact. This is a problem.

There is no hard data on cost recoupment for any type of sale.

Within the past year, heavy emphasis has been placed on this aspect throughout the FMS program with early results being favorable.

19. All parties involved in processing munition sale cases are aware the munition items are being shipped to a foreign government.
-

Headquarters USAF:

Yes, if the USG directives are followed. The commands seem to be very conscientious on shipment of munitions, especially classified and hazardous material.

Headquarters AFLC:

It is normally not necessary for all parties to have information.

Headquarters AFSC:

I am not convinced that this is the case with subcontractors and parts suppliers.

ALC:

They probably are aware, with a few rare exceptions.

ILC:

This is sometimes a detriment in the processing of a requisition. I have a feeling that at times processing is held up because people do know that the item is being shipped to a foreign government.

MAAG/Mission/ODC:

I don't see how they could fail to realize this.

I doubt it.

We sometimes know, but it is not necessary for us to know associated schedules.

I don't believe the above to be true, since much of the work is done through computers, etc.

20. The difference in the way the U.S. conducts its munition procurements versus the procurement methods used by the purchasing country can result in misunderstanding.
-

Headquarters USAF:

Why? How? A purchasing country's procurement methods are ignored in the FMS processing arena.

Unified Command:

This is the case across the board for FMS (not restricted to munitions).

Headquarters AFSC:

This can be overcome by open communication.

ALC:

Yearly budgeting on a same fiscal year basis with the U.S. could be a great improvement here.

MAAG/Mission/ODC:

Nothing that cannot be explained. Host country deals in calendar year funding, while we have fiscal year funding.

21. Defective munition items including incomplete assemblies and unserviceable units are received by the purchasing country.
-

Headquarters USAF:

Yes--it does occur, but countries tend to inflate failures. This was the case recently when the failure rate was 80 of 1000, rather than 80 of 200 items as originally reported.

It sometimes happens.

Unified Command:

Not a lot. It happens to U.S. users and foreign customers alike.

Headquarters AFLC:

Some munition items are defective similar to other kinds of items. When you are involved in billions of dollars and hundreds of thousands of items, defects are going to occur.

ALC:

This has been only a small percentage of total effort in our area.

For the amount of munitions sold, I believe the number of ROIDs processed are very limited.

This is true in all other areas. Why should munitions be an exception? No logistics system is perfect.

ILC:

No doubt some items are received in the condition cited above; however, we do not feel this is significant.

Sometimes munitions from inventory sales are a problem.

A procedure should be developed for whole round/complete round shipments when desired by a purchasing country with appropriate increased costs.

That's why they submit ROIDs. Hopefully with the greater emphasis on Quality Assurance, this can be minimized.

MAAG/Mission/ODC:

Most items purchased are old stock items that require QA prior to shipment. Defectives are rejected.

Our main problem is service life. We sometimes receive munitions (cartridges especially) whose service life is very short.

We know of certain situations, but this is expected in large volume transactions, especially on items tested through sampling methods or packaged not assembled (but in component parts).

I am personally aware of at least four munitions items which were shipped from stocks and there were unserviceable items in each group. In one case, the manufacturer's defect tag was still attached to some items. Quality control on items issued from stock appears extremely poor.

22. Total transportation cost of munitions shipped by air from the U.S. are recovered.
-

Headquarters AFLC:

The freight forwarder provides transportation.

Required--but not always accomplished.

ALC:

A separate charge for shipping munitions should be charged due to the danger in transportation.

As we can identify them and depending where title is passed.

ILC:

The mechanics are there.

23. Munition sales of U.S. non-standard (not in U.S. inventory) versus standard (in U.S. inventory) munition items result in increased administrative cost.
-

Headquarters USAF:

Yes--this is reflected in increased costs added to LOA for non-standard items.

Unified Command:

Seems self evident. Whether or not the costs are recouped on a specific case is moot.

Headquarters AFLC:

For other types of non-standard articles (spare parts/pubs) the administrative charge is 5 percent as opposed to 3 percent for standard items.

ALC:

Procurement of non-standard items, of any kind, is always more expensive, so far as administrative costs are concerned.

Anytime that we don't have an item in our inventory, costs or procurement and administration will be higher.

There are several problems with FMS non-standard items (TOs, depot repair, spares, etc., problems are caused by non-standard items).

It is almost impossible to get a contractor to bid on USAF obsolete items and most quantities are not sufficient to cover the enormous start-up cost.

Both involve equal effort at the ALC level.

ILC:

By regulation this is so, as well as in practice.

For sure. It also increases cost to customer because of the small quantity.

Not usually.

MAAG/Mission/ODC:

Especially in area of technical data support.

Should result in higher basic (item) price and not in a higher administration charge.

24. Negotiation by the foreign government of an offset agreement to produce components as a condition of a munition sale is increasing.
-

Headquarters USAF:

Most foreign governments want U.S. Technology, i.e., production capability. However, only the advanced nations in the long run benefit from offset. Underdeveloped nations generally find no real market for their products after a short period of country needs.

Unified Command:

Overall yes, especially small arms.

Headquarters AFLC:

This would be contrary to DOD policy.

Headquarters AFSC:

I feel that this arrangement has serious long term effects on our own industrial readiness, as USAF suppliers are being pushed out of the market.

There is too much of this.

ALC:

Purchaser countries are definitely asking. I don't know if we are agreeing.

There have been some beginnings at this time in our area.

Co-production of items is increasing to help defray costs and help their balance of payments.

ILC:

It is decreasing per guidance contained in the MASM which states we do not encourage offsets.

It's a general trend in all FMS.

Foreign governments are increasingly looking for offsets in all FMS transactions.

MAAG/Mission/ODC:

No offsets here. Not widely used in FMS.

Would think it makes good sense in those countries with the capability.

A necessity in large sales.

25. The present procedures for establishing responsibility for loss and damage claims are adequate.
-

Headquarters USAF:

FMS country probably would agree since they want no risk or do not want to go through ROIDs procedures.

Unified Command:

And too time consuming.

Current procedures are at least as effective as baggage claims against an airline.

ALC:

The ROID system is adequate although there should not be an automatic approval of all ROIDs under \$100. Some countries have taken advantage of this provision.

Many drag on for too long and some countries come in on claims years after receipt.

ILC:

Pinpointing actual responsibility is at times difficult as evidenced by the Judge Advocates Office's voluminous workload and the number of ROIDs submitted.

MAAG/Mission/ODC:

The ROID system is good.

If the pipeline is long, establishing damage responsibility is very difficult and often frustrating.

This is an extremely big problem. I have to deal with confusing and often contradictory regulations. It's hard for me (eighteen years logistics experience). Can you imagine how host country feels when they don't even read English?

I personally feel that claims for damage are submitted against the USG when the freight forwarder should be held responsible.

It is hard to define "adequate" in this context; however, there is room for improvement.

26. Standard surcharges for recovering port handling costs recover all costs.
-

Unified Command:

Problems occur when material is handled as normal military cargo.

Headquarters AFLC:

This is an accounting problem. I don't think we can even identify all costs. We are probably over-charging.

ILC:

At no time can a percentage of unit cost recoup these costs.

27. Actual lead time for procurement and production of many munition items exceeds the estimated lead time (reflected in block 18, "Availability and Remarks" of the DD form 1513) for delivery under FMS munition cases.
-

Headquarters USAF:

It happens such as current DSU-21 fuze production problems.

It happens when production complications arise, particularly for new items.

Headquarters AFLC:

All lead times are often not included; administrative lead times are frequently understated.

Not if item/system manager does his job.

Headquarters AFSC:

Sometimes.

If P&A data is used to formulate LOAs this should not be the case. The problem arises when political commitments overrule realistic schedules.

ALC:

Mainly due to excessive processing time, and poor lead and production time estimates from procurement sources.

Not if cases are processed timely, so the ALC can include them in the annual and semi-annual buys. Elapse of time from one case sign-off until the ALC actually gets the case for supply action varies from four to six months, sometimes.

Because of excess processing time, this is becoming more and more the case.

This appears to be true in other areas--why not munitions? Lead time is usually an estimate (educated guess). Also, the country sometimes receives items before "estimated lead time" date. Probably tends to balance out.

Delays can occur because of contractor strikes, country requirement being too small to get bids, and having to go through the small business association.

ILC:

This is a "sore point" in the majority of munitions sales to include CAD/PAD.

MAAG/Mission/ODC:

We need better controls on the total administration time--from date of case acceptance to date of contract.

Normally, lead time is always longer than specified.

An ever present problem--often an embarrassment to the USAF representative on the end of the pipe. The assistance effort loses credibility in the bargain.

But, recent efforts are being made to make notification when delays are known.

28. The current computerized supply system provides for efficient processing of a FMS munition case.

Headquarters USAF:

The FMS system is superimposed on a computer system designed to support MAP and USAF system workloads.

Unified Command:

I would say it does no worse for FMS than normal U.S. users but efficient is not the word; adequate perhaps.

Headquarters AFSC:

Usually.

ALC:

It is not working in my cases. Time delays are being experienced by all of my IMs in getting their requisitions through the system.

The current system is less than 50 percent capable due to many interface problems. This area needs immediate attention and correction.

ILC:

HO51 is totally inadequate for FMS management. Lack of system interfaces is also a problem.

It leaves a lot to be desired especially in the area of receiving valid current status.

MAAG/Mission/ODC:

Our involvement is in the manual portion of the process.

We do not know. However, since munitions are not presently "requisitioned" (requirements are defined in advance), we would think problems should be minimal.

29. The purchasing nations are not presently paying for all cost incurred by the U.S. in FMS munition sale cases.
-

Headquarters AFLC:

Transportation, quality assurance, asset use (when applicable), and contract audit costs are all questionable.

Data is often not available or erroneously not included.

Headquarters AFSC:

The 3 percent surcharge is inadequate.

ALC:

This is probably true to some extent for all types of cases, regardless of whether or not they are munitions cases.

I feel that both over and undercharges occur. On the whole this does not appear to be a problem, until accounting methods can really show us true costs.

I know many personnel involved who are not being counted in the costs.

ILC:

It is my "gut feeling" that in all sales the U.S. Government is losing money.

I feel we're collecting the majority of costs incurred although an occasional one may slip through.

MAAG/Mission/ODC:

This depends on how important we perceive it to be selling to a country.

If you are aware of any problem areas you would like to include within this survey, please write them in the space provided below.

Headquarters USAF:

Why no questions on commercial availability? Why ask question 5 under Demographic data? Why seven of twenty-nine questions on recovery of costs? Don't believe you can compare tactical weapons, especially missiles, with other munitions.

Unified Command:

I have been only indirectly associated with the munitions FMS program through an informal, advisory capacity on the staff. We in . . . are normally "opened" on MSG traffic through the "key subject" distribution system; i.e., if the title/subject mentions munitions, we get a C4. It is then through self-initiated actions that we normally become involved. My observations in this questionnaire are based upon the preponderance of MAAG messages, which are in gross error--type component, quantity mix or incomplete. To cite several examples:

- (1) allied nation bought without any support equipment--testers/launchers/handling equipment.
- (2) recent case for a quantity of 2.75" rx which specified inert motors.
- (3) same case as (2) mk 82 inert bombs with inert fuzes, boosters, and delay elements--no fins.

These are merely a few examples. Frankly cannot remember one completely correct case. We offer our services in an advisory/monitoring capacity (because a complete round can be a complex mix of line items: however, are seldom involved at the onset. Strongly believe expert munitions advice is needed in the field).

Case closings--excessive time.

Headquarters AFSC:

Manpower to support FMS planning/management is inadequate. Trained people are hard to find.

Recommend USAF/DOD review our own purchase procedures of foreign munitions. There will be more of this in the future due to USG and foreign government understandings/agreements. One particular problem area is royalties that will be required to be paid to FMS contractors.

SAAC Billing Procedures. Policy is too dynamic. More contact is needed between SPO and foreign customer to definitise requirements prior to P&A preparation.

ALC:

During most phases of processing FMS cases, there are not enough qualified people/personnel to accomplish the tasks within the required time frames. This necessitates the use of other than normal FMS personnel. These are significant costs and they are not being recouped. The solution to the foregoing is to assign adequate personnel with the proper skills to accomplish the varied tasks in FMS so all personnel costs can be recouped.

Inadequate policy and procedures (i.e., pricing and billing policies). Many regulations governing sales of munitions to foreign countries have conflicting information.

Inadequate procedures and functional responsibilities, problem is that you have (5) ALCs that do not operate the same way. Procedure from HQ does not clarify what organization at the ALC level is required to perform the task.

There are many, many differences in regulations. Example, instructions for pricing a P&A which the item is to be supported from stock with no replacement is acquisition plus 15 percent. When it's time to bill an item shipped from stock HO75B takes standard price which is many times different, then ILC country managers expect ALC managers to justify for difference. Also munition items is DO34 system. There is no training for this system. ILC country managers know nothing concerning DO34 system.

ILC:

The biggest problem is the U.S. Army's role as single point manager for munitions. The fragmentation of responsibility is disturbing.

Failure to recoup all costs, the complete round problem, and munitions QA procedures.

I believe that a more efficient method of obtaining the P&A data would be for services to go directly to the U.S. Army procuring agency. This would prevent the loss of time of going from HQ to command level and then to subcommand before going to the Army for the data.

MAAG/Mission/ODC:

From personal experience as a munitions supply officer for six years, the biggest problem is a lack of underfunded munitions programs and closing of too many munitions plants. The U.S. Army is really the main munitions supplier and they only inspect "depot" munitions every five years. I received a lot of badly corroded munitions from the Army, plus many items are in short supply due to plant closures. The U.S. must fund and adequately maintain munitions stocks for ourselves and allies. FMS sales are not a big problem here. Production delays have been our biggest problem in missile cases. I think future sales of solid state electronic technology will cut maintenance and total costs for missile systems. This will help a lot along with digital electronic systems.

Some DD-1513s do not spell out exact item on case; it has general codes, etc. All 1513s should have detailed data (NSN, Generic, DODAC) listed; we are not ammunitions experts in-country and we do not have the books for research. All documentation for ammo ships should be sent to the ODC immediately so that necessary preparations can be effected. This is supposed to be done by ocean terminals, but I have examples of receiving documentation after the ship has been here. Requirements of AFR 55-38 are extremely confusing and perhaps not practical. Confirmation that a ship was offloaded could be done easier by the ship itself since it has all original documentation signed by in-country individual.

The only problem we really have is persuading host country personnel to maintain reliable records of munitions purchases and of installation and consumption, especially CAD/PADs. Also, difficulty is experienced in getting countries to react expeditiously to the annual calls for buys. Calls are usually received in the AUG-SEP time frame for response by December, which allows ample and reasonable time to aggregate data and for placing of request. However, we have experienced problems when a country buys used aircraft from USAF and CAD/PADs do not come with aircraft (stock, not those installed). The USAF base that transfers the aircraft for FMS sale should also transfer the share of CAD/PADs associated with those aircraft.

Shipment of munitions as a "dangerous cargo" is always a problem. EOQ can delay an order into the next fiscal year where funds are lost. EOQ delays issuance of LOAs. Quality of U.S. munitions is often below the quality expected by a country.

Producers other than the U.S. are able to furnish munitions of a more recent manufacture in a more responsive manner than the U.S., at nearly the same costs. The U.S. is selling eight to ten year old ammunition at current production prices, yet cannot meet delivery times.

APPENDIX H
FOREIGN MILITARY OFFICERS' VIEWS

The opportunity existed for the authors, during the process of this research, to approach a number of foreign military officers currently working or knowledgeable in the FMS arena. It is not within the scope of this thesis to evaluate their viewpoint. However, the FMS process is, after all, a buyer and seller relationship. Therefore, the following is presented as the results of informal discussions held between the aforementioned officers and the authors. For the most part the officers contacted were not agreeable to formal interviews, hence no bibliography exists of these discussions.

The following areas were the ones commented on and perceived as a problem for their respective countries. The order in which they are listed is not intended to provide a ranking by magnitude of the problem as viewed by the foreign national officers contacted.

1. Components received in-country were not the items requested (i.e., inert rocket rather than live rocket motors).
2. The final cost was normally higher than the agreed upon cost.
3. United States representatives in-country did not appear to have the expertise to resolve their problems.

4. Items such as bombs are received without fins, boosters, etc.

5. Items requested are not received in the time frames agreed upon.

6. The United States in-country representative response that the requested item just missed the annual munition ship is often offered as the reason for delays. The foreign military officers indicated they have heard this on so many occasions it is viewed as a half-hearted excuse.

7. It is questioned whether the United States government fully understands or fully supports their countries' requirements.

The aforementioned comments represent the areas which were consistently mentioned in the authors' conversations with the foreign military officers. While some country representatives stated that they had encountered no serious problems, others stated they were continually plagued with inconveniences and problems.

The overall impression which these conversations left with the authors was that the foreign national officers as a group felt there was room for certain improvements in the execution of their FMS munition contracts with the United States Government.

The material presented in this appendix was not gathered by a rigorous research approach. Therefore, the reader is again reminded that this appendix is provided for informational purposes only.

APPENDIX I
ANALYSIS OUTPUTS

This appendix presents the results of the ranksum calculations involved in the Kendall Tests. It was on the basis of these ranksums that the questions were ranked in order of importance; the lowest ranksum indicated the most important question.

One note of explanation regarding the headings is pertinent. Each output is labeled either "Scale A" or "Scale B." The former refers to the one analysis of all respondents regarding Air Force-wide problems. The latter refers to the eight individual analyses: one for each category of respondents relating to agency-specific problems.

GREENLY/SCHULER THESIS LSSR 38-80

SUM OF RANKS FOR SCALE A RESPONSES

ALL RESPONDENTS

KENDALL'S W= 0.141 KENDALL'S Q= 244.17

NUMBER OF INDIVIDUAL RANKINGS = 62

QUESTION NUMBER	RANK-SUM
1	765.50
2	902.50
3	1002.50
4	829.50
5	874.00
6	1037.00
7	576.00
8	1031.00
9	1061.00
10	1110.00
11	1033.50
12	1061.00
13	1168.50
14	1066.50
15	694.50
16	998.50
17	1003.50
18	1129.50
19	1121.00
20	575.00
21	739.00
22	1142.00
23	678.00
24	879.50
25	967.50
26	1040.50
27	607.50
28	856.00
29	1019.50

GREENLY/SCHULER THESIS LSSR 38-80

SUM OF RANKS FOR SCALE A RESPONSES

RESPONDENTS HANDLING CASES WEEKLY

KENDALL'S U= 0.134 KENDALL'S Q= 146.52

NUMBER OF INDIVIDUAL RANKINGS = 39

QUESTION NUMBER	RANK-SUM
1	449.00
2	550.50
3	668.50
4	560.00
5	559.00
6	644.00
7	356.50
8	623.50
9	666.50
10	666.00
11	616.50
12	679.00
13	762.00
14	624.00
15	430.00
16	600.50
17	635.50
18	714.50
19	710.50
20	356.50
21	510.50
22	723.00
23	429.50
24	549.50
25	616.00
26	658.00
27	431.50
28	519.00
29	655.50

GREENLY/SCHULER THESIS LSSR 38-80

SUM OF RANKS FOR SCALE B RESPONSES

AGENCY: HQ USAF

KENDALL'S W= 0.181 KENDALL'S Q= 25.38

NUMBER OF INDIVIDUAL RANKINGS = 5

QUESTION NUMBER	RANK-SUM
1	86.50
2	69.00
3	78.50
4	58.50
5	80.50
6	59.00
7	53.00
8	84.50
9	66.00
10	86.50
11	94.50
12	81.50
13	89.00
14	67.00
15	50.50
16	79.50
17	94.50
18	79.00
19	94.50
20	36.00
21	54.50
22	102.50
23	80.50
24	53.00
25	94.50
26	90.50
27	77.00
28	62.50
29	72.00

GREENLY/SCHULER THESIS LSSR 38-80

SUM OF RANKS FOR SCALE B RESPONSES

AGENCIES: UNIFIED COMMANDS

KENDALL'S W= 0.419 KENDALL'S Q= 70.42

NUMBER OF INDIVIDUAL RANKINGS = 6

QUESTION NUMBER	RANK-SUM
1	142.50
2	67.50
3	115.50
4	51.00
5	84.00
6	106.50
7	49.00
8	113.50
9	115.50
10	111.50
11	106.00
12	107.00
13	98.00
14	125.50
15	88.50
16	84.00
17	70.00
18	130.00
19	84.50
20	44.50
21	36.00
22	133.50
23	48.00
24	106.00
25	68.50
26	100.00
27	38.50
28	80.50
29	104.50

GREENLY/SCHULER THESIS LSSR 38-80

SUM OF RANKS FOR SCALE B RESPONSES

AGENCY: HQ AFLC

KENDALL'S W= 0.330 KENDALL'S Q= 46.14

NUMBER OF INDIVIDUAL RANKINGS = 5

QUESTION NUMBER	RANK-SUM
1	57.00
2	119.00
3	91.50
4	92.50
5	79.00
6	97.50
7	61.00
8	68.00
9	94.50
10	70.50
11	84.50
12	78.50
13	117.50
14	82.00
15	57.50
16	89.00
17	95.50
18	76.00
19	90.00
20	43.50
21	24.00
22	73.50
23	24.00
24	68.50
25	97.00
26	56.50
27	54.50
28	63.00
29	69.50

GREENLY/SCHULER THESIS LSSR 38-80

SUM OF RANKS FOR SCALE B RESPONSES

AGENCIES: ALC'S

KENDALL'S W= 0.257 KENDALL'S Q= 64.77

NUMBER OF INDIVIDUAL RANKINGS = 9

QUESTION NUMBER	RANK-SUM
1	88.00
2	134.50
3	157.00
4	144.00
5	136.00
6	169.00
7	101.00
8	136.50
9	190.50
10	156.00
11	193.00
12	164.00
13	174.50
14	120.00
15	79.00
16	103.00
17	140.00
18	165.00
19	166.00
20	111.00
21	135.50
22	169.50
23	66.00
24	145.50
25	105.50
26	159.00
27	81.50
28	95.00
29	129.50

GREENLY/SCHULER THESIS LSSR 38-80

SUM OF RANKS FOR SCALE B RESPONSES

AGENCY: ILC

KENDALL'S W= 0.273 KENDALL'S Q= 45.93

NUMBER OF INDIVIDUAL RANKINGS = 6

QUESTION NUMBER	RANK-SUM
1	72.50
2	118.00
3	81.50
4	77.50
5	79.00
6	73.00
7	72.00
8	105.00
9	119.50
10	116.00
11	121.00
12	96.00
13	110.00
14	117.00
15	46.00
16	118.50
17	113.50
18	84.50
19	106.00
20	53.50
21	57.00
22	106.50
23	41.00
24	100.00
25	121.00
26	81.00
27	64.50
28	53.50
29	105.50

GREENLY/SCHULER THESIS LSSR 38-80

SUM OF RANKS FOR SCALE B RESPONSES

AGENCIES: HQ AFSC,ASD,ESD

KENDALL'S W= 0.353 KENDALL'S Q= 69.17

NUMBER OF INDIVIDUAL RANKINGS = 7

QUESTION NUMBER	RANK-SUM
1	57.50
2	126.00
3	117.50
4	118.50
5	103.00
6	107.00
7	51.50
8	121.50
9	106.50
10	144.50
11	123.00
12	93.00
13	159.00
14	104.50
15	43.50
16	115.50
17	108.00
18	152.00
19	152.00
20	42.00
21	117.50
22	148.00
23	49.00
24	88.50
25	98.00
26	116.00
27	68.00
28	112.00
29	102.00

GREENLY/SCHULER THESIS LSSR 38-80

SUM OF RANKS FOR SCALE B RESPONSES

AGENCIES: MAAGS/MISSIONS

KENDALL'S W= 0.160 KENDALL'S Q= 49.30

NUMBER OF INDIVIDUAL RANKINGS = 11

QUESTION NUMBER	RANK-SUM
1	129.00
2	185.50
3	212.00
4	124.50
5	193.50
6	207.50
7	112.00
8	196.00
9	163.00
10	175.50
11	144.50
12	190.00
13	175.00
14	200.50
15	142.00
16	155.00
17	143.50
18	172.50
19	195.50
20	95.50
21	153.50
22	217.00
23	167.00
24	156.00
25	135.00
26	188.50
27	108.00
28	142.50
29	205.00

GREENLY/SCHULER THESIS LSSR 38-80

SUM OF RANKS FOR SCALE B RESPONSES

AGENCIES; OFFICES OF DEFENSE COOPERATION

KENDALL'S W= 0.166 KENDALL'S Q= 65.10

NUMBER OF INDIVIDUAL RANKINGS = 14

QUESTION NUMBER	RANK-SUM
1	201.00
2	192.00
3	218.00
4	243.00
5	197.50
6	289.00
7	120.00
8	231.50
9	239.00
10	284.50
11	200.00
12	232.50
13	204.50
14	220.00
15	127.50
16	268.00
17	220.00
18	243.50
19	249.50
20	116.00
21	152.50
22	227.50
23	177.00
24	225.00
25	213.00
26	245.00
27	136.00
28	221.50
29	195.50

APPENDIX J

STRENGTH-OF-AGREEMENT DISCUSSION

Purpose

This appendix offers evidence to support the authors' claim that the respondents to the research survey showed the strongest agreement in deciding which of the twenty-nine questions in the survey were the ten most important ones facing the Air Force in the FMS of munitions.

Two procedures are used. The first deals with a random split of the respondents into two groups, with a comparison of the rankings by each of these two groups. The second procedure involves examining the shape of the distribution of the ranksum values as a function of the level of agreement among the respondents.

Random Split of Pool of Respondents

The pool of sixty-two respondents who answered the survey as it pertained to the problems of the Air Force as a whole were split, at random, into two groups of thirty-one each. The Kendall Test was performed on the ratings of each group. The result was that the groups agreed most strongly on which were the ten most important problems. A comparison of the two rankings showed that each of the two randomly-created groups ranked eight of the same problems in the top third of its list. The middle third of each list (ranks 11 - 20) and the last third (ranks 21 - 29) each showed four problems in common. While no statistical

conclusion can be drawn from this rudimentary comparison, the inference is that a higher level of agreement exists among all respondents in identifying the ten most important problems, than in identifying the next ten most important, or the nine least important, problems.

At this point in the discussion, the reader should not be concerned with which problems appeared in the top-third of each list; but, only with the fact that it was in the top third that the greatest agreement existed. The following example, when it is generalized to the ranking by all respondents of the Air Force-wide problems, will make clear those problems for which the greatest agreement exists.

Ranksum Distribution

A simplified case is used to present the basis of the procedure. It consists of five judges ranking five items. The points made are then applied to the twenty-nine problems in the analysis of the research survey.

Three examples are presented to illustrate various levels of agreement. The figure which accompanies these will compare the distributions of the ranksums. (Note: the ranksums are computed as for the Kendall Test.)

Example 1. All judges agree on the rank awarded each item. Each ranksum (RS) in such a case of perfect

agreement is a multiple of the number of items ranked
(i.e., five items in this case).

EXAMPLE 1	Item	Judge					RS
		1	2	3	4	5	
	1	1	1	1	1	1	5
	2	2	2	2	2	2	10
	3	3	3	3	3	3	15
	4	4	4	4	4	4	20
	5	5	5	5	5	5	25

Example 2. There is no consensus at all. No two judges agree on the rank to be assigned any item. All the items have the same ranksum.

EXAMPLE 2	Item	Judge					RS
		1	2	3	4	5	
	1	1	2	3	4	5	15
	2	2	3	4	5	1	15
	3	3	4	5	1	2	15
	4	4	5	1	2	3	15
	5	5	1	2	3	4	15

Example 3. The strongest level of agreement on the rankings is for items 1 and 2. In each case, four of the five judges agree on the rank. On the other hand, items 3, 4, and 5 show lesser levels of agreement. None of these items is assigned the same rank by as many as three of the judges. Clearly, there is more disagreement among the opinions relating to items 3, 4, and 5, than among opinions relating to items 1 and 2.

EXAMPLE 3	Item	Judge					RS
		1	2	3	4	5	
	1	1	1	1	1	2	6
	2	2	2	2	2	1	9
	3	3	4	5	3	4	19
	4	4	5	3	4	5	21
	5	5	3	4	5	3	20

When the values of the ranksums for each of the three examples are plotted on a chart of the possible ranksum values (Figure 2), the impact of the varying levels of agreement can be seen.

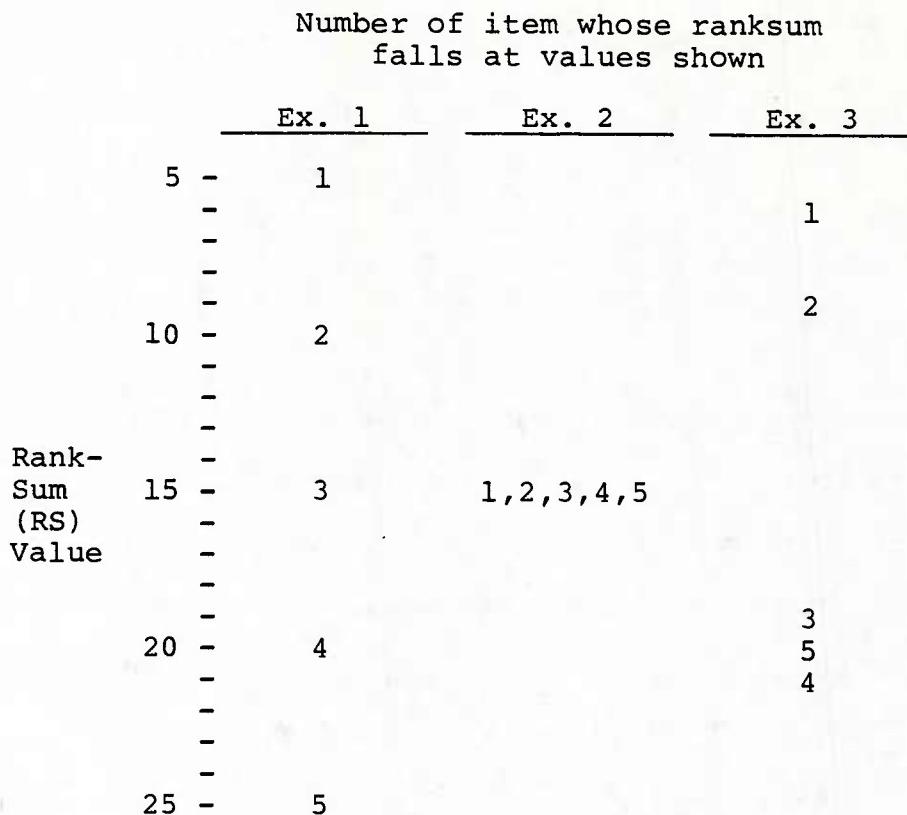


Fig. 2. Sample ranksum distribution

For example, the perfect agreement of Example 1 results in an even spread of the ranksums between the lowest and highest values. The total lack of agreement in Example 2 results in a clustering of all ranksums midway between the two extremes.

It is Example 3 which shows points of interest which may be generalized to the survey analysis. Note that the ranksums for items 1 and 2 are farther apart than those for items 3 to 5. Those for items 1 and 2 more closely approach the pattern of perfect agreement shown in Example 1. The ranksum distribution for items 3 to 5 more resembles that of Example 2, which illustrated no agreement at all.

The conclusion to be drawn from this example is apparent. When the ranksums of a list of items are plotted to show the distribution, that segment of the listing whose ranksums shows the greatest spread indicates the greatest degree of agreement among the various judges or raters. That segment of the list which shows more clustering of the ranksums indicates a lower level of agreement among the judges.

The reader's attention is now drawn to Table 7, which shows the distribution (similar to that in Figure 2) of the ranksums of the twenty-nine questions in the research survey. Note that the greatest spread of the distribution

TABLE 7
RANKSUM DISTRIBUTION OF
SURVEY QUESTIONS

Range of Ranksum Values	Number of Survey Question
576 - 600. . . .	20,7
601 - 625. . . .	27
626 - 650. . . .	
651 - 675. . . .	
676 - 700. . . .	23,15
701 - 725. . . .	
726 - 750. . . .	21
751 - 775. . . .	1
776 - 800. . . .	
801 - 825. . . .	
826 - 850. . . .	4
851 - 875. . . .	28
876 - 900. . . .	5,24
901 - 925. . . .	2
926 - 950. . . .	
951 - 975. . . .	25
976 - 1000. . . .	16
1001 - 1025. . . .	3,17,29
1026 - 1050. . . .	8,11,6,26
1051 - 1075. . . .	9,12,14
1076 - 1100. . . .	
1101 - 1125. . . .	10,19
1126 - 1150. . . .	18,22
1151 - 1175. . . .	13

occurs in the top few problems. The most clustering occurs in that part of the distribution with a Ranksum value greater than 950. This clustering in one part of the distribution and spread in another part are similar to that shown in Example 3 above. Recall from Example 3 that the greatest spread was indicative of the greatest level of agreement among the judges or raters. When this relationship is applied to Table 7, the same conclusion appears as was drawn from the random split of the pool of respondents: Namely, that the respondents agree more strongly on which problems should be ranked at the top of the list than on which problems be ranked farther down the list. (The reader is reminded that the lowest ranksum is for that problem ranked most important; and the highest ranksum is for the problem ranked least important.)

Conclusion

This appendix has attempted to demonstrate that two different procedures used to analyze the rankings by the respondents of the problems in the survey, as they relate to the Air Force as a whole, yield the same conclusion. That conclusion is that the respondents agree most among themselves on what the most important problems are, and least among themselves on what the lesser-important problems are.

One final point is appropriate here. Note from Table 7 that some clustering appears in the top three problems (Questions 20, 7, and 27); in the problems ranked in the next two places (Questions 23, and 15); and, in the two places following that (Questions 21, and 1). This clustering is minimal when compared to that which appears in the remainder of the list. The conclusion to be drawn is that the greatest level of agreement actually exists in the top seven problems. It is on these seven that the greater part of the discussion in the last segment of Chapter IV focuses.

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